Final Report

Knowledge Centric Organization Implementation Pilot Project at SPAWAR Systems Center Charleston

Submitted

By
Technology Intelligence International LLC

To
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1. Executive Summary

The Department of Navy (DON) Chief Information Officer (DONCIO) and SSC-CHS jointly supported this new initiative to implement Knowledge Management at SSC-CHS. This joint project brings together the DONCIO's KM program in providing a KM framework to the DON with SSC-CHS's desire to increase their organization's efficiency and productivity by promoting knowledge sharing and learning throughout their organization. This collaborative project is part of a broader initiative by SPAWAR headquarters to develop KM systems and processes. The pilot project began in August, 2000 and continued with seven workshops and multiple informal working sessions until March, 2001. The focus of the project was Business Development as chosen by the SSC-CHS team as their primary concern.

KM is a new and popular field that strives to build a methodology to harness the natural interactions among people that lead to the sharing of knowledge, whether through informal conversations, libraries, or formal training. Although there are many definitions of KM, the DON identifies Knowledge Management as "a process for optimizing the effective application of intellectual capital to achieve organizational objectives." The Knowledge Centric Organization (KCO) model is built on a holistic approach to intellectual capital, which includes Human Capital, Social Capital and Corporate Capital. All three of these are essential components of Enterprise Knowledge. The DON IM/IT vision is a knowledge-centric organization where people can make and implement effective and agile business decisions.

The DON CIO has developed the KCO model to assist Navy and Marine organizations to capitalize on their knowledge assets and begin implementing KM. The framework is built around five balanced concepts: technology, process, content, culture and learning. This balance is important to avoid overemphasizing one aspect to the detriment to the overall effectiveness of the organization. For example, many new information technologies promise to deliver human-like information analysis but technology alone is insufficient, we need to simultaneously change processes and provide the tools for people to use that technology. Building a KCO benefits all levels of an enterprise: individuals (enhanced job performance, increased collaboration opportunities, facilitated learning); organizations (enhanced mission performance, improved decision making, greater use of expertise, process improvements, reduced duplication); and the enterprise (leveraging organization knowledge, increased innovation and creativity, aligning strategic directions).

The KCO implementation process was adapted from the KCO Opareas as a streamlined process concentrating on the actual time, resource, and outcome needs of SSC-CHS. However, since this was the first KCO implementation project, the process was modified throughout the pilot project based on feedback from the entire DONCIO/ SSC-CHS team. The following steps define the implementation process used during the pilot project.

1. Identify potential topics and key knowledge assets

Give briefings and provide background information on what the key KM principles are, and what the differences are among data, information, and knowledge. Working

interactively with the pilot project team, determine knowledge that is being used or is needed within their organization for critical business processes.

2. Determine feasibility and Return on Investment

Once the critical knowledge assets have been identified, the feasibility and projected value to the organization of exploiting them is determined by building a consensus estimate within the pilot project team. Knowledge assets which are too difficult to collect and manage, or which do not yield substantial benefits to the organization are discarded from further consideration.

3. Create maps of owners and users of knowledge assets, and collect, organize, and distill them

Specific knowledge assets are mapped to the people who create them and who will use them, and under what situations they will be used. Scenarios are created to demonstrate how the potential tangible and intangible benefits enumerated in the previous step will arise for different types of users and contexts.

4. Define metrics and evaluate project, and adapt as needed

Metrics of all three types (outcome, output, and system) are defined as customized performance measures to the specific pilot project topic and knowledge assets. The results of the metrics evaluations are used to reassess the pilot project focus and methods. Changes are made in the pilot project according to the metrics evaluation.

5. Build awareness and spread KM expertise

Awareness of the benefits of implementing the KCO model is spread through multiple briefings to various groups in the organization. KM expertise is transferred to the local pilot project team members by having them lead the briefings and workshops as they become more accustomed to the KCO model and implementation process.

6. Build Communities of Practice around "hot" topics

Communities of Practice are limited to “hot” issues within the organization to ensure people will be interested enough in them that they will participate in the informal but web-based Communities of Practice.

7. Design and deploy systems

The supporting technology systems are designed at the end of the process to ensure people understand that the knowledge assets must be manually assembled, particularly at first.

A baseline assessment of the KM understanding and existing practices in SSC-CHS was made using the KCO surveys. Two sets of surveys were used in Aug 2000 and Jan 2001. The first set was the initial draft KCO survey while the second set was the final version of the KCO survey and the KMAT survey. The survey results show that the SSC-CHS team is knowledgeable about KM principles, methods, and implementation issues. In particular, the team understands that there aren’t any simple technological solutions to building a KCO, and that significant cultural

and process issues must be handled while building the KCO. This is evident from the beliefs that SSC-CHS has an effective technology base, there are substantial benefits to building a KCO, people enjoy and gain from sharing and learning with colleagues, and that there is not a reward system in place to prod people into regularly investing the effort to distill experience and information into useful knowledge for the entire organization.

The following characteristics of a good KM project were used to guide the discussion of potential KM focus areas.

- High business impact (easy to see success)
- Strong advocacy within leadership
- Project results and lessons will be useful for other KM projects
- Feasible

Additionally, KM projects are more likely to succeed when they revolve around the core competencies of an organization. For SSC-CHS, the team identified the following items:

- Systems Engineering
- SW/HW design & development
- Operations & Maintenance
- Systems Integration
- Installations

Business Development was chosen as the topic for the pilot project. Prior to the vote, the participants discussed the importance of choosing a high-impact project. A high-impact project was defined as: providing a substantial and measurable improvement to the organization; being appreciated as a success by executives who are not involved in the pilot project; worthy of significant effort by many members of the project team in addition to their regular duties. Using these criteria, the Forms topic was not considered as high-impact, and the Data Call topic was not considered feasible because the required information was unknown, variable, and not controlled by SSC-CHS.

This portion of the workshop tackled the difficult task of distilling all the disparate information needs for business development into a short list of very high impact knowledge assets. The first activity defined knowledge assets, and differentiated them from merely important but uncritical information. Knowledge assets are distinguished by:

- Context -What was going on when the learning occurred?
- Distilled Learning - Guidelines, Questions, Checklists, Better Practices
- Performance Histories - Local stories & insights, i.e. what really happened and why
- People - Who to talk to when you really want to learn & apply
- Artifacts - Stuff you can reuse in electronic form

Indeed, it is essential to understand that KM is not about simply increasing people’s access to information. On the contrary, access to large amounts of information is good when there is ample time to peruse it, but this access does not provide quick answers. KM seeks to provide these answers as rapidly and accurately as possible, either through stored pertinent information or links to other people who are likely to know the answer. The importance of a knowledge asset depends on the context and timing of its use. Thus, it is not enough to just identify what pieces of

information can be distilled and consolidated into knowledge assets and content centers, but we must understand how and when they are likely to be used to ensure that they are organized and packaged appropriately.

The top ranked knowledge asset is SSC-CHS project and expertise information. The pilot project team collected synopses for every branch in the SSC-CHS command. These were organized into a database and posted on the Corpweb intranet Knowledge Management web site. The synopses are available on the KM web site at https://corpweb2.spawar.navy.mil/kme/ or at http://corpweb/kme/. A knowledge map is being created of all the owners of the critical knowledge within SSC-CHS. This knowledge map will also serve as the rapid pathway guide to continually updating and improving the synopses. An example is given below.

> The Communication Systems Department (J50) provides innovative systems engineering and integration expertise for communication and information transfer systems across the frequency spectrum and around the globe. Our technical expertise is aligned to engineer, implement, and support telecommunications and switched networks, integrated networks and network management systems, tactical and expeditionary communications, satellite systems, advanced technology communication systems development, and network applications, services and operations. This department applies knowledge and expertise with service-specific, Joint, and coalition interoperable communications architectures to deliver and integrate state-of-the-art communications capabilities to the warfighter.

Metrics play a pivotal role in Knowledge Management since the complexity and large variety of possible knowledge assets precludes a standard requirements definition process. For Knowledge Management Systems (processes and tools), many of the critical requirements cannot be articulated before hand since they are so dependent on the context of use and unspoken tacit needs. Consequently, metrics provide important feedback that can be used to continuously modify and adapt the system as the user's needs become known.

The KCO model defines three types of metrics: outcome; output; and system. These differ by which level of the organization they consider and monitor. Outcome metrics concern the overall organization and measure large scale characteristics such as increased productivity or revenue for the Charleston command. Output metrics measure project level characteristics such as the effectiveness of Lessons Learned information to capturing new business. System metrics monitor the usefulness and responsiveness of the supporting technology tools.

The first phase of collecting assets concentrated on creating video interviews of people for Lessons Learned and short statements of key insights. This is a rapid way to get high-impact knowledge that can benefit large numbers of people. The team members submitted proposed questions that were reviewed and prioritized by the KM team. The specific questions used for each interview are chosen according to the experience and knowledge of the interviewee. Thus, each interviewee will not be asked all questions, and the list was culled to a smaller set for each interview.

Each code representative identified several people from their respective codes as potential interview subjects. These candidates were reviewed by the pilot project team to create the final list of interview subjects based on availability, expertise, and pertinence to the chosen topics, who were: Terry Simpson, Will Gex, James Ward, John Linden, Capt Ron Crowell, Myra Rice.

Examples of the questions covered in the videos are listed below. For each question, the experts who answered the question are listed along with a short statement from the answer and the play time of the segment in minutes:seconds.

- What lessons have you learned about how to identify a good lead for capturing and growing business?
  a) John Linden: "We work heavily within our industry partners and universities to determine what the next technology curves are going to be. Understanding what the customer wants today and what the customer is going to want in the future, keeping yourself abreast of technology change is absolutely essential.. "{1:13}
  b) Terry Simpson: "Not every customer has a problem that we can solve and not every customer has the funding requirements. It is ok to be selective about what we go after. We can't go after everything; we have to prioritize. Be objective with customers. "{0:45}
  c) Will Gex: "In capturing leads, you should try to avoid cold calls. There is a very low rate of return. It is better to grow business through existing customers. Trust is the key ingredient. With a cold call you have to develop that trust, which can be difficult from the beginning. With existing customers, that trust should already be in place." {0:54}

The Knowledge Management Environment (KME) was built as a simple web site to house the knowledge assets collected. The KME is part of CorpWeb and will be expanded and modified based on the metrics defined and described earlier.

Another key component of the pilot project is the Community of Practice that will be hosted on the web-based system. The Community of Practice must be carefully designed and maintained to ensure that users find it useful, enjoyable, and valuable. There is a formal program to build Communities of Practice within SPAWAR and the Department of Navy. Several members of the SSC-CHS KCO Pilot Project team are also members of these Community of Practice teams. Although the formal Community or Practice committees are addressing the larger issues of how to start and maintain these activities, the pilot project needs to implement a few Communities of Practice to support the building of the KCO.

These ideas were filtered into the following initial set of topics for Communities of Practice.

- Business development – this is the primary theme of the pilot project and should be reinforced with a Community.
- Project Management – already have interest expressed by Charleston people
- Engineering

An online session with business development efforts was held on 22 Feb 01 for one hour to generate interest in the new Knowledge Management Environment, and in particular, several Communities of Practice. Two Communities of Practice: Business Development and Project

Management were started although only the Business Development community was widely publicized because of the online session with experts.

The pilot project is far enough along that a review can yield important conclusions. Thus, the workshop participants were asked to openly comment on the project, and to point out good and bad aspects. This feedback is valuable for two reasons: 1)it produces a Lessons Learned that can be used as the KM initiative expands outward from the pilot project team; and, 2)it allows DONCIO to improve the KCO model and implementation methods.

Local project team comments

- Threaded discussions for Communities of Practice
    - People are too busy to do much besides their core work
    - Possibly set aside a time dedicated to this activity so that it is part of people's jobs, such as is done with the Friday Brief
    - Discussions should be integrated with email display on desktop so people can scan them the same way they do email for interesting topics
    - Add daily alerts to personalized Corpweb homepages on subscribed interests
- Pilot project timing
    - The pace should be faster
    - Trying to arrange workshops with the pilot project team present led to inevitable delays because of conflicting schedules.
    - Look for a quick win on a smaller project that is already underway
    - Discussion frequently went on tangents that slowed decision making but tangential discussions were important to explore new culture and ways of thinking
    - Professional facilitator could help meetings progress but a facilitator's lack of subject matter knowledge will hinder the group's ability to make decisions on new cultural issues and processes
    - DONCIO should provide templates of new processes and tools that can be implemented right away so pilot project team can learn while implementing these templates instead of learning and creating new processes
    - Need a short cookbook of detailed processes useful for everyday workflow
- Pilot project content
    - Need something tangible to work on from the beginning to maintain people's interest
    - There is a lot of great information on the CD but it needs to be organized so that people can quickly get an overview and then get more detail when it is needed- need a cookbook with a good Table of Contents and Index
    - Review reports should be consolidated and concise
    - Need to answer "what's in it for me?" from the start in everyday terms
- Pilot project outcomes
    - There has been a major shift in understanding of KM and the need to do more than manage information, and to include people-based processes
    - This was an overhead activity from each department's own funds so it reduced participation because it conflicted with the need to minimize overhead costs
    - Management should show support by providing funding for this activity
    - This effort must grow outside of the pilot project and become part of the normal workflow

- Pilot project team should become the new teachers and guides to bring KM to their groups
- Business Integrators have started a new project that grew out of early KM workshops that seeks to manage information but that allows people to connect to the right person at the right time instead if just relying on the information management system

DONCIO team comments

- The period of time from the beginning of the project to disseminating the first knowledge assets should follow a schedule of approximately three months working through any schedule problems
- A tangible product should be built from the start of the pilot project and continuously improved
    - The DONCIO team should help build some products (e.g. simple web sites, databases, collaboration sessions) when it will overcome time hurdles for the local project team even though the local team should build as much as possible to increase their learning
- Although team members may wish to speed up the project by using common meeting methods (such as professional facilitators, small subgroups, focused agendas, etc), these should be used sparingly since impromptu discussions are an important part of exploring new ideas
    - Too short a decision making process on what knowledge assets, tools, methods, and metrics are most important will lead to an incomplete understanding of the key differences between information and knowledge.
    - People need time to accept new cultural and business process concepts
    - A translation of KCO objectives into standard daily business processes should be developed to quicken acceptance of the KCO
- Communities of Practice should begin with a clear demonstration of specific benefits to potential participants to get them involved in addition to the general awareness briefing.

The pilot project succeeded in achieving its goal to spread KM practices and understanding in the DON. This goal is accomplished through the primary objectives.

1. Create awareness of principles and benefits of a KCO - Multiple awareness briefings were held to explain KM and the KCO across SSC-CHS. The KCO model CDROM was loaded onto a SSC-CHS internal server with announcements made on the intranet (Corpweb) and in the print newsletter. Also, by including members of each SSC-CHS department on the pilot project team, a knowledgeable representative was present in each department to spread awareness.
2. Build a functioning KCO testbed to serve as a growth center for the entire organization- An extensive KCO process effort occurred that reoriented people towards understanding what knowledge assets are, and how to identify, prioritize, collect, organize and disseminate them. The pilot project collected succinct statements of project and expertise capabilities of all SSC-CHS branches based on the project team's assessment of what was valuable and mutually beneficial. These knowledge assets were placed on a simple web site on Corpweb and organized according to a task based scheme determined by the

project team to be the most intuitive for users. The new KM Environment's URL is: https://corpweb2.spawar.navy.mil/KME/

3. Train pilot project team to become in-house KCO experts – This is potentially the most important accomplishment of the pilot project. The local pilot project team members clearly understood and could articulate the critical KCO aspects at the end of the project. They did an exceptional job learning and understanding the core principles of KM and KCO and became effective leaders of the KCO process.
4. Review KCO model performance and modify- The KCO implementation process was reviewed by the SSC-CHS project team during the last workshop. The team made specific comments on which parts worked well and which need to be improved, which are listed in this report. The key critiques showed that the process works very well although it should be faster and have concrete deliverables generated at each stage rather than waiting to the end of the process. An important portion of the KCO process which cannot be accelerated despite user's desire to do so is the cultural change required to have people understand the differences among knowledge, information, and data and the need to share some knowledge even if there are legitimate reasons not to share all knowledge.
5. Develop Lessons Learned from KCO implementation- Preliminary Lessons Learned have been determined and listed in this report. A more thorough analysis of the pilot project will be done after other KCO implementation projects are performed, which will produce a complete set of Lessons Learned.

2. KCO Implementation Pilot Project

2.1. Introduction

Knowledge has long been the key for unlocking the potential of an individual or organization. The right piece(s) of information at the right time is a priceless commodity to decision-makers. Yet, we operate in an environment where there is too much information and too little knowledge. In this spirit, a pilot project was undertaken at SPAWAR Systems Center Charleston (SSC-CHS) to build a Knowledge Centric Organization (KCO). The project was designed to generate enthusiasm about Knowledge Management (KM) and to implement a system that encourages the sharing and reuse of important action-oriented knowledge.

The Department of Navy (DON) Chief Information Officer (DONCIO) and SSC-CHS jointly supported this new initiative to implement Knowledge Management at SSC-CHS. This joint project brings together the DONCIO's KM program in providing a KM framework to the DON with SSC-CHS's desire to increase their organization's efficiency and productivity by promoting knowledge sharing and learning throughout their organization. This collaborative project is part of a broader initiative by SPAWAR headquarters to develop KM systems and processes. The pilot project began in August, 2000 and continued with seven workshops and multiple informal working sessions until March, 2001. The focus of the project was Business Development as chosen by the SSC-CHS team as their primary concern.

SPAWAR develops, delivers, and maintains integrated command, control, communications, computer, intelligence and surveillance systems (C4ISR). The SPAWAR Systems Centers perform the engineering and technical support required to build, test, install, and maintain these systems. As one of the three Systems Centers, SPAWAR Systems Center – Charleston (SSC-CHS) plays a pivotal role in providing and maintaining Fleet C4ISR systems. The SSC-CHS strategic plan recognizes the changing needs of the Fleet as the nature of current and future warfare continues to evolve and the DON adapts business and operational practices to support new Fleet needs. SSC-CHS is answering this challenge by improving its responsiveness to their sponsor's technical and financial needs.

A core component of the strategic plan is to capitalize on the expertise, capabilities, and experience throughout the SPAWAR enterprise to help all programs and people. Similarly, the DONCIO has developed a new strategic Information Management (IM) / Information Technology (IT) plan for the DON. This plan explicitly states the need for the DON to build a knowledge sharing culture and capitalize on the ability of IT to facilitate knowledge transfer across the globally distributed enterprise. Goal four of the IM/IT Strategic Plan calls for the DON to "Implement strategies that facilitate the creation and sharing of knowledge to enable effective and agile decision-making." The value of Knowledge Management to the DON is formally stated as:

> "Knowledge Management offers the potential to significantly leverage the value of our IT investment and the intellectual capital of our people. Information technology

and information management are essential, but alone are insufficient to achieve information superiority. Knowledge management strategies facilitate collaborative information sharing to optimize strategic and tactical decisions, resulting in more effective and efficient mission performance."

While Goal four states the need to create a knowledge sharing culture within the DON, Goal five recognizes the important role of technology tools to support the business processes people engage in to create and share knowledge. Goal five seeks to "Exploit emerging information technologies to achieve breakthrough performance" and states the importance of new technologies as:

"Apply technology to achieve and sustain information dominance. Technology is a corner-stone for achieving revolution in military and business affairs. Application of technological innovations improves mission performance. Partner with industry and academia to identify and exploit breakthrough technologies."

This chapter gives a summary of the pilot project activities and results. Complete reports for each workshop are provided in subsequent chapters.

2.2. Knowledge Centric Organization(KCO)

KM is a new and popular field that strives to build a methodology to harness the natural interactions among people that lead to the sharing of knowledge, whether through informal conversations, libraries, or formal training. Although there are many definitions of KM, the DON identifies Knowledge Management as "a process for optimizing the effective application of intellectual capital to achieve organizational objectives." The Knowledge Centric Organization (KCO) model is built on a holistic approach to intellectual capital, which includes Human Capital, Social Capital and Corporate Capital. All three of these are essential components of Enterprise Knowledge. The DON IM/IT vision is a knowledge-centric organization where people can make and implement effective and agile business decisions.

2.2.1. KCO Model

The DON CIO has developed the KCO model to assist Navy and Marine organizations to capitalize on their knowledge assets and begin implementing KM. The framework is built around five balanced concepts: technology, process, content, culture and learning. This balance is important to avoid overemphasizing one aspect to the detriment to the overall effectiveness of the organization. For example, many new information technologies promise to deliver human-like information analysis but technology alone is insufficient, we need to simultaneously change

processes and provide the tools for people to use that technology. Building a KCO benefits all levels of an enterprise: individuals (enhanced job performance, increased collaboration opportunities, facilitated learning); organizations (enhanced mission performance, improved decision making, greater use of expertise, process improvements, reduced duplication); and the enterprise (leveraging organization knowledge, increased innovation and creativity, aligning strategic directions).

The KCO model is divided into operational areas (Oparea) that focus on key elements (figure 1). Under each Oparea are sub-areas (OpsCenters) designated as Alpha, Bravo, Charlie, Delta, and Echo. A new user can build their awareness of KM and create an operating knowledge base support system by following the step-by-step, tack-by-tack directions in Opareas II through IV, and learn about brokering knowledge in that system in Oparea V. An organization that is well into implementation of a knowledge system can explore the value of communities in Oparea VI, scan Oparea VII for new ideas, and use the Resource Library as reference material. A summary map of all the KCO areas is in Appendix A.

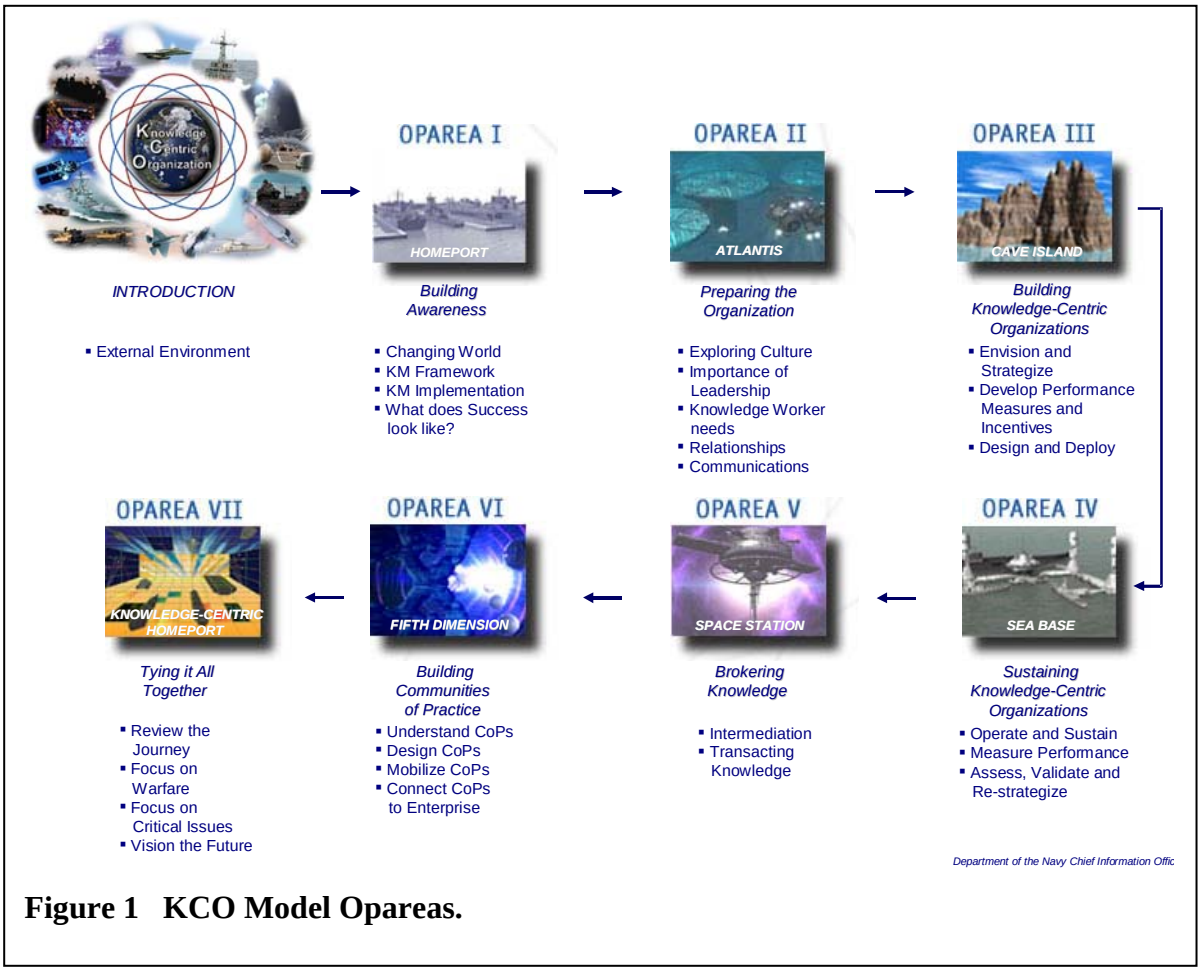

Figure 1 KCO Model Opareas.

The SSC-CHS pilot project did not follow the order of the KCO Opareas but implemented the portions applicable to the objectives of each workshop. This procedural difference reflects one of the Lessons Learned from the first KCO implementation project, namely that the cultural change and personal learning components of KM strongly determine the pace and details of project. Thus, portions of Opareas three and four must be used early in the implementation process to help people understand the tangible characteristics of knowledge assets and to differentiate information and knowledge. Indeed, the latter ability is the largest barrier to overcome in the first stage of implementing the KCO and KM. The following table shows how the various portions of the KCO model were used throughout the pilot project.

Table 1 Opareas and Opscenters used in each of the seven workshops (W1-W7).

Oparea	Opscenter	W1	W2	W3	W4	W5	W6	W7
I	ALPHA: Changing worlds	X	-	-	-	-	-	-
	BRAVO: KM Framework	X	X	X	-	-	-	-
	CHARLIE: KM Implementation	X	X	-	-	-	-	-
	DELTA: What does success look like?	X	X	-	-	-	-	-
II	ALPHA: Exploring Culture	X	X	-	-	-	X	-
	BRAVO: Importance of Leadership	X	X	-	X	-	-	-
	CHARLIE: Focus on User Needs	X	X	X	X	-	-	-
	DELTA: Relationships	X	-	X	-	-	-	-
	ECHO: Communications	X	X	X	-	-	-	-
III	ALPHA: Envision and Strategize	-	X	X	X	X	X	X
	BRAVO: Develop Performance Measures and Incentives	-	-	-	X	-	-	-
	CHARLIE: Design and Deploy	-	-	-	X	-	X	X
IV	ALPHA: Operate and Sustain	-	-	-	-	-	X	X
	BRAVO: Measure Performance	-	-	-	-	-	-	X
	CHARLIE: Assess, Validate, and Restrategize	-	-	-	-	-	-	X
V	ALPHA: Intermediation	-	-	X	X	-	-	-
	BRAVO: Transacting Knowledge	-	-	X	X	-	-	-
VI	ALPHA: Understand Communities of Practice	X	-	X	X	-	-	-
	BRAVO: Design Communities of Practice	-	-	X	X	X	X	X
	CHARLIE: Mobilize Communities of Practice	-	-	-	X	-	X	X
	DELTA: Connect Communities of Practice to the Enterprise	-	-	-	-	X	X	X
VII	ALPHA: Review the Journey	-	-	-	-	-	-	X
	BRAVO: Focus on Warfare	-	-	-	-	-	-	-
	CHARLIE: Focus on Critical Issues	-	-	-	-	-	-	X
	DELTA: Vision the Future	-	-	-	-	-	-	-

2.2.2. KCO Implementation Process

The KCO implementation process was adapted from the KCO Opareas as a streamlined process concentrating on the actual time, resource, and outcome needs of SSC-CHS. However, since this was the first KCO implementation project, the process was modified throughout the pilot project based on feedback from the entire DONCIO/ SSC-CHS team. The following steps define the implementation process used during the pilot project.

1. Identify potential topics and key knowledge assets

Give briefings and provide background information on what the key KM principles are, and what the differences are among data, information, and knowledge. Working interactively with the pilot project team, determine knowledge that is being used or is needed within their organization for critical business processes. This knowledge is embodied in knowledge assets, both tacit and explicit, that the pilot project will concentrate on exploiting. Choose a business topic for the pilot project.

2. Determine feasibility and Return on Investment

Once the critical knowledge assets have been identified, the feasibility and projected value to the organization of exploiting them is determined by building a consensus estimate within the pilot project team. Knowledge assets which are too difficult to collect and manage, or which do not yield substantial benefits to the organization are discarded from further consideration. The projected ROI , using both tangible and intangible benefits, is determined in order to show to senior leadership to explain the value of the KCO and the framework for assessing the pilot project's success.

3. Create maps of owners and users of knowledge assets, and collect, organize, and distill them

Specific knowledge assets are mapped to the people who create them and who will use them, and under what situations they will be used. Scenarios are created to demonstrate how the potential tangible and intangible benefits enumerated in the previous step will arise for different types of users and contexts.

4. Define metrics and evaluate project, and adapt as needed

Metrics of all three types (outcome, output, and system) are defined as customized performance measures to the specific pilot project topic and knowledge assets. These performance measures are continually reviewed to ensure they measure the critical success features of the KCO implementation as much as possible, including intangible benefits. The results of the metrics evaluations are used to reassess the pilot project focus and methods. Changes are made in the pilot project according to the metrics evaluation.

5. Build awareness and spread KM expertise

Awareness of the benefits of implementing the KCO model is spread through multiple briefings to various groups in the organization. These briefings include the senior leadership when possible, and reach out to small workgroups to show the individual nature of KM. KM expertise is transferred to the local pilot project team members by having them lead the briefings and workshops as they become more accustomed to the KCO model and implementation process.

6. Build Communities of Practice around "hot" topics

Communities of Practice are started around important topics identified by the pilot project team and the workgroups visited during awareness briefings. These topics are limited to “hot” issues within the organization to ensure people will be interested enough in them that they will participate in the informal but web-based Communities of Practice.

7. Design and deploy systems

The supporting technology systems are designed at the end of the process to ensure people understand that the knowledge assets must be manually assembled, particularly at first. People can distill information into knowledge assets but technology is still too imprecise to successfully fuse disparate data and information into succinct knowledge assets. Also, the technology systems must be designed according to usability precepts and continually gauged for their effectiveness in presenting users with rapid and precise responses.

2.3. Objectives

This pilot project is the first formal implementation of the KCO model in a DON enterprise. Thus, the project serves the two primary goals of building KCOs in the DON and providing test data on the KCO model to modify it as needed. The objectives of the pilot project and the expected outcomes are listed in Table 1.

Table 2 Pilot project objectives and expected results.

Objective	Expected result	Actual result
Create awareness of principles and benefits of a KCO	People throughout organization know that KM is important, can provide substantial improvements in efficiency and productivity, focuses on human knowledge and understanding instead of data or information management, and has leadership support	Multiple awareness briefings were held to explain KM and the KCO across SSC-CHS. DONCIO KCO model CDROM loaded onto SSC-CHS internal server with an announcement made on the intranet (Corpweb) and in the print newsletter.
Build a functioning KCO testbed to serve as a growth center for the entire organization	Implement KCO process to identify and prioritize knowledge assets, engender culture of knowledge sharing and learning, capture and organize key assets, design and deploy KM Environment to disseminate assets	An extensive KCO process effort occurred that reoriented people towards understanding what knowledge assets are, and how to identify, prioritize, collect, organize and disseminate them. The pilot project collected succinct statements of project and expertise capabilities of all SSC-CHS branches based on the project team's assessment of what was valuable and mutually beneficial. These knowledge assets were placed on a simple web site on Corpweb and organized according to a task based scheme determined by the project team to be the most intuitive for users. The new KM Environment's URL is: https://corpweb2.spawar.navy.mil/KME/
Train pilot project team to become in-house KCO experts	Local team becomes KCO experts and can help others to understand KCO principles and apply KCO to other workgroups and business needs	The SSC-CHS pilot project did an exceptional job learning and understanding the core principles of KM and KCO. They became effective leaders of the KCO process by actively building the KM Environment and deciding what knowledge assets were valuable for all of SSC-CHS that they deserved to be collected and shared.
Review KCO model performance and modify	Obtain detailed KCO model performance information and determine modifications that can improve model	The KCO implementation process was reviewed by the SSC-CHS project team during the last workshop. The team made specific comments on which parts worked well and which need to be improved, which are listed in this report. The key critiques showed that the process works very well although it should be faster and have concrete deliverables generated at each stage rather than waiting to the end of the process. An important portion of the KCO process which cannot be accelerated despite user's desire to do so is the cultural change required to have people understand the differences among knowledge, information, and data and the need to share some knowledge even if there are legitimate reasons not to share all knowledge.
Develop Lessons Learned from KCO implementation	Practice KM on KCO to distill key insights and conclusions on building a KCO to develop Lessons Learned to share throughout DON	Preliminary Lessons Learned have been determined and listed in this report. A more thorough analysis of the pilot project will be done after other KCO implementation projects are performed, which will produce a complete set of Lessons Learned.

2.4. Personnel

The DONCIO KCO implementation assistance team consisted of:

- Mr. Henry Pinner (SSC-CHS lead), 843-218-5234, pinnerh@spawar.navy.mil
- Capt. Jim Kanter, 703-601-0047, Kantner.James@HQ.NAVY.MIL
- Dr. Geoffrey P Malafsky, 703-764-1903, gmalafsky@techi2.com
- Capt. Mickey Ross, RossM@spawar.navy.mil
- Sandra Smith, 703-602-6545, smith.sandra@hq.navy.mil

The SSC-CHS pilot project team included:

Table 3 SSC-CHS pilot project personnel.

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David Norwood	SSC NCR	202-685-1337	norwoodd@spawar.navy.mil

2.5. Plan of Action and Milestones

The timeline and major activities for the SSC-CHS pilot project is shown in figure 2. The project began in early Aug 2000 with a discussion at the DONCIO Knowledge Fair in Washington, DC between SSC-CHS and DONCIO about DONCIO's KM implementation assistance program. This led to the first workshop which explored the status of KM at SSC-CHS and determined if a joint KM project was feasible and desired. The timeline was strongly affected by the availability of the local pilot project team.

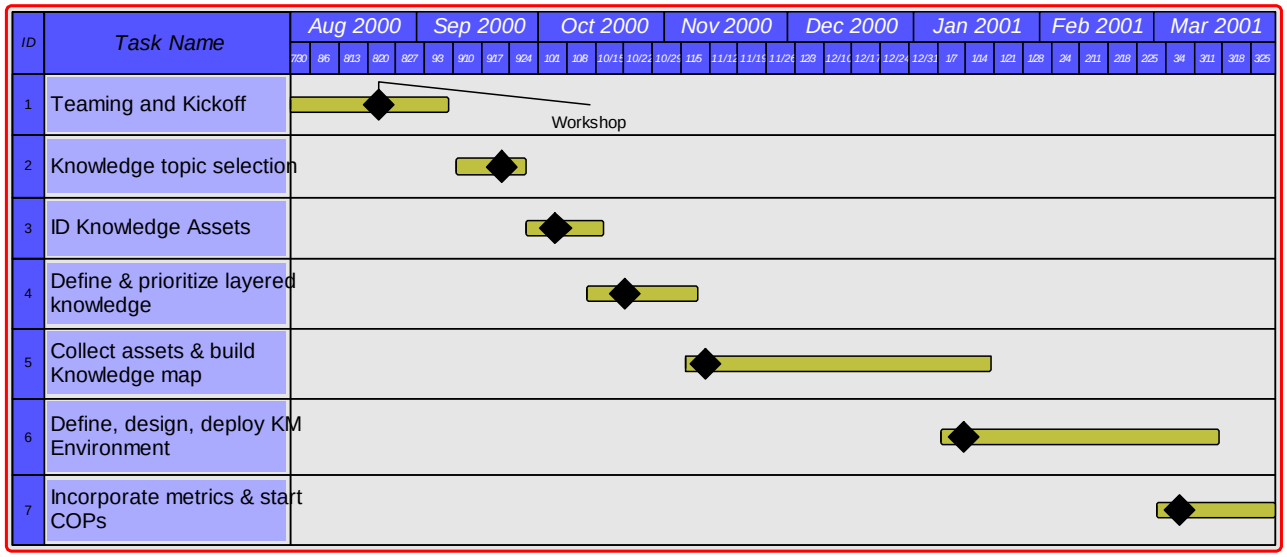

Figure 2 Timeline and milestones for SSC-CHS KCO pilot project. Diamonds indicate workshops.

2.6. Working sessions

The dates and objectives of each of the workshops and major working sessions are listed in the table below. All workshops took place at SSC-CHS.

Table 4 Major working sessions during the SSC-CHS KCO pilot project.

Title	Date	Objectives
Kick-off workshop (W1)	22 Aug 00	Initial meeting. Survey SSC-CHS KCO awareness. Identify topics.
Project selection workshop (W2)	19-20 Sep 00	Choose topic for pilot project and identify key features of topic
Knowledge Asset and Content Center Workshop (W3)	3-4 Oct 00	Identify and prioritize knowledge assets for Business Development topic. Plan awareness briefings.
SSC-CHS awareness meetings	12 Oct 00	Visit SSC-CHS groups to explain pilot project and learn needs
Knowledge Asset and Metrics Workshop (W4)	17-18 Oct 00	Listen to panel of Business Integrators discuss their Business Development issues and methods. Specify scenarios of use for knowledge assets and prioritize accordingly. Develop output and system metrics for pilot project.
SPAWAR HQ Meeting	31 Oct 00	Meet SPAWAR CIO and CKO to discuss transition of SSC-CHS pilot project across corporate SPAWAR
Knowledge Asset Collection Workshop (W5)	3 Nov 00	Develop list of questions and candidates for interviewing to get tacit knowledge from Business Development experts
SSC-CHS Interviews	12 Dec 00	Interview Business Development experts in SSC-CHS multimedia studio
Creating Knowledge Assets Workshop (W6)	4-5 Jan 01	Give and critique new KCO survey. Plan collection of project and capabilities synopses. Edit video interviews. Plan new Communities of Practice.
Synopses review teleconference	17&23 Jan 01	Review and modify synopses from each branch using distributed collaboration (Netmeeting, email and telephone). Complete planning for online expert session to inaugurate new Communities of Practice.
Community of Practice Expert Panel	22 Feb 01	Operate Communities of Practice threaded discussions
Knowledge Management Environment Design and Pilot Project Review Workshop (W7)	6-7 Mar 01	Review design of new website containing knowledge assets. Critique pilot project.

2.7. Results

This section presents a summary of the overall results of the pilot project. Additional details can be found in the individual workshop reports contained in chapters 3-9.

2.7.1. SSC-CHS KM Assessment

A baseline assessment of the KM understanding and existing practices in SSC-CHS was made using the KCO surveys. Two sets of surveys were used in Aug 2000 and Jan 2001. The first set was the initial draft KCO survey while the second set was the final version of the KCO survey and the KMAT survey.

The KCO survey is designed to identify the organization's current attitudes, business processes, and support infrastructure (management and systems) that affect the building of a KCO. The survey results should be recorded in a database to allow correlation analysis among the demographics and answers. In addition, this database will allow subsequent surveys to be correlated to assess the change over time of attitudes, processes, and successful implementations of Knowledge Management methods.

The survey has four sections covering:

1. Demographic information
2. Current Knowledge Management practices, processes, and tools
3. The benefits of a KCO to the organization
4. Personal Knowledge Management experience and views

The objectives of the survey are:

- Identify current state of Knowledge Management methods and tools in the organization
- Assess cultural acceptance of new ideas
- Determine recognition of need for KCO
- Determine recognition of value of KCO, and impact on jobs
- Assess level of personal support or resistance to KCO

This survey complements the KMAT survey on the KCO CDROM. The KMAT survey is intended to determine how well an organization has incorporated Knowledge Management principles and methods into its basic workflow. In contrast, this survey focuses on the attitudes that will help or hinder the organization from becoming a KCO. This information is vital to design an effective implementation strategy and plan. The survey is consciously written in a manner to foster open discussion of the organization's needs, attitudes, and barriers to the KCO.

The primary results of the first survey are:

- Most people don't think KM is well understood in the organization
- Most people are unsure if there is sufficient funding to accomplish the KM objectives
- Most people recognize the importance of teamwork in KM
- Most people think the organization has adequate IT resources

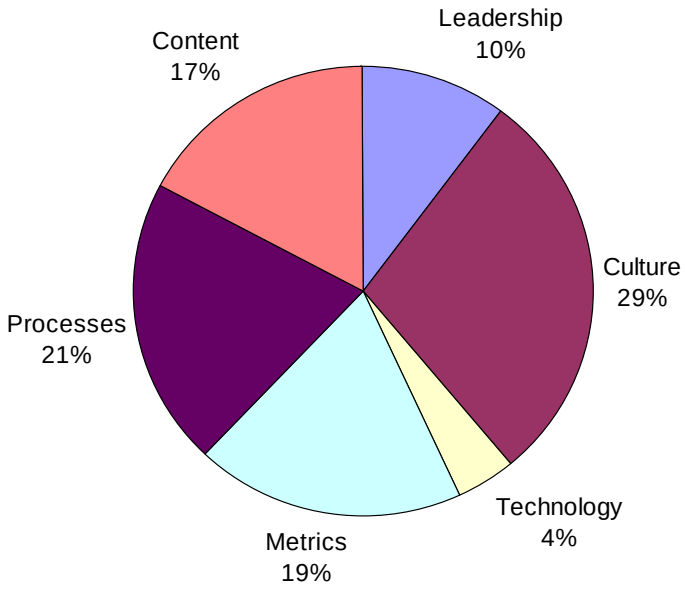

Figure 3 First survey results from SSC-CHS on which components of KM are critical for success.

These results show that the SSC-CHS team is knowledgeable about KM principles, methods, and implementation issues. In particular, the team understands that there aren't any simple technological solutions to building a KCO, and that significant cultural and process issues must be handled while building the KCO. This is evident from the beliefs that SSC-CHS has an effective technology base, there are substantial benefits to building a KCO, people enjoy and gain from sharing and learning with colleagues, and that there is not a reward system in place to prod people into regularly investing the effort to distill experience and information into useful knowledge for the entire organization.

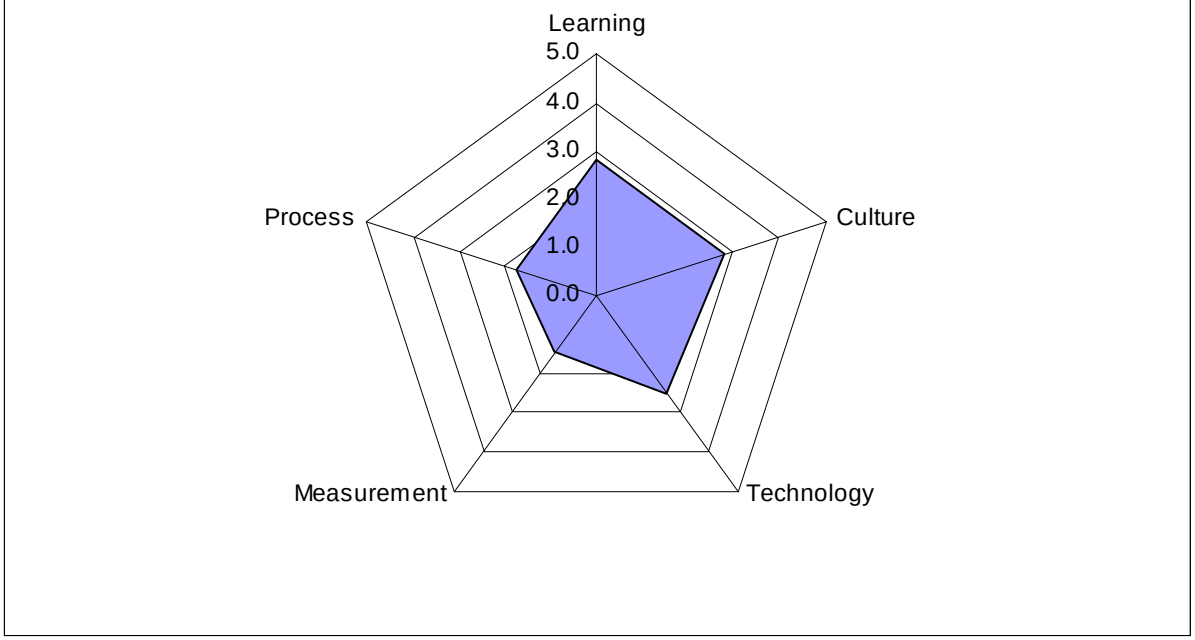

Figure 5 Radar chart of average scores of questions for KMAT components (Learning, Culture, Process, Measurement, and Leadership) showing how closely the organization is aligned with the KMAT model of a fully Knowledge Centric Organization.

The KMAT survey can be used to measure a baseline of the organization at the beginning of the KCO implementation project, and at the end of the project to measure improvement. It is complementary to the KCO Assessment survey and both should be used during the project.

The KMAT results show that SSC-CHS is still early in the process of building a KCO. In addition, the KMAT survey requires a very high level of organizational KM proficiency and support in order to score high. This will yield low scores at the beginning of a KCO implementation, but should result in steadily climbing scores as long-term KCO methods and processes are implemented and adapted to the specific needs of the organization.

The most notable difference between the results from Jan 2001 and the survey given in August 2000 is the change in attitude on the importance of managing content. The original survey shows that people did not feel that content management was a critical function for success, whereas in the new survey the group rated their organization's performance on content management at a medium level indicating that they need to improve this area.

2.7.2. Pilot Project Topic Selection

The following characteristics of a good KM project were used to guide the discussion of potential KM focus areas.

- High business impact (easy to see success)
- Strong advocacy within leadership
- Project results and lessons will be useful for other KM projects
- Feasible

Additionally, KM projects are more likely to succeed when they revolve around the core competencies of an organization. For SSC-CHS, the team identified the following items:

- Systems Engineering
- SW/HW design & development
- Operations & Maintenance
- Systems Integration
- Installations

The final set of potential business topics and their key characteristics for the KM pilot project are:

1. Business development
   - Capture business opportunities
   - Identify new markets
   - Identify expertise
   - Find deficiencies
   - Associate with training and staffing
2. Project management
   - Find synergy among projects and Lessons Learned
   - Get official information in a timely manner
   - Organize employee training
   - Perform PM process modeling and improvement
   - Collect and share Lessons Learned
3. Personnel
   - Manage training
   - Locate and validate experts
   - Handle merger issues on integrating methods, skills, projects, career development
4. Form use
   - How to use
   - When to use
   - Caveats
   - Auto-fill: really want the information on the form, not the form
5. Data calls

- What data is needed
- Where is the data
- What actions are required

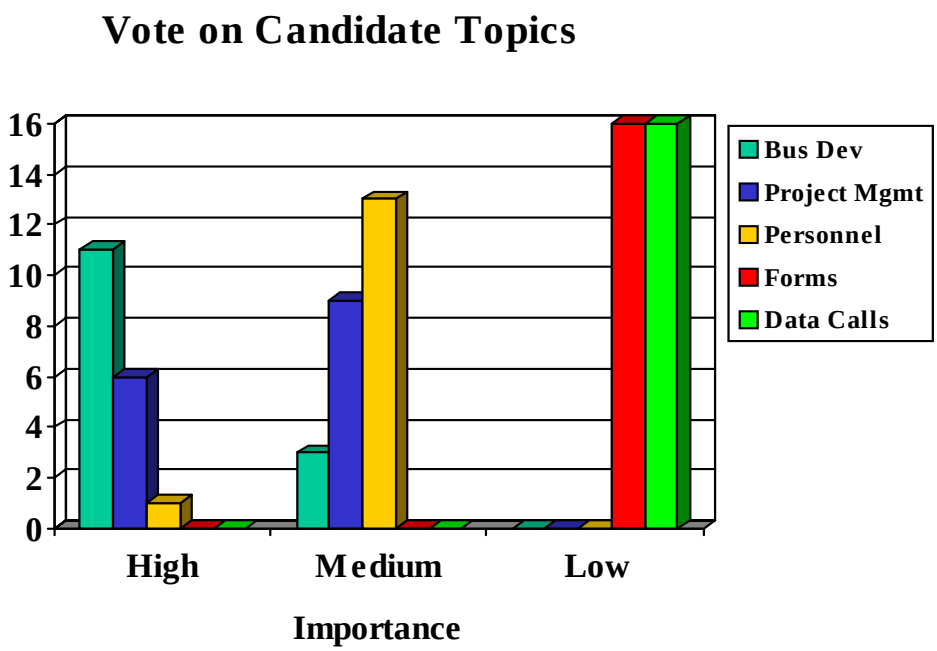

Figure 6 Pilot project selection results.

Business Development was chosen as the topic for the pilot project. Prior to the vote, the participants discussed the importance of choosing a high-impact project. A high-impact project was defined as: providing a substantial and measurable improvement to the organization; being appreciated as a success by executives who are not involved in the pilot project; worthy of significant effort by many members of the project team in addition to their regular duties. Using these criteria, the Forms topic was not considered as high-impact, and the Data Call topic was not considered feasible because the required information was unknown, variable, and not controlled by SSC-CHS.

The project team discussed and identified the specific aspects of business development that SSC-CHS needs to make more efficient and productive. These are:

1. Awareness of opportunities – currently get information on new opportunities from:
   - Direct customer interactions, especially from current customers
   - Referrals from current customers, other SSCs (little), and partners(govt and industry at 1:4 ratio). Industry acts as both a contractor and a team member, e.g. company will

ask SSC to test product and use data for further development which SSC can market to their customers
    - Published: CBD, engineering trade magazines, professional societies
    - Business intelligence: e.g. funding, timing
2. Internal awareness and knowledge of expertise and specific projects
3. Strategic planning
    - Technology roadmaps and forecasts
    - Core competencies
    - Business plan
    - New markets (non-DoD)
4. Competitive business intelligence
5. Other DoD and government labs
6. Market trends
7. Awareness and knowledge of competitor's expertise, needs, and weaknesses
8. How to turn competitors into partners

2.7.3. Current KM Related Initiatives

The SSC-CHS participants were asked to list current projects and issues at SSC-CHS that are related to KM, whether by business processes or by technology. These projects can be leveraged for the KCO implementation.

- ECITECH-D is a web based system hosted on a server in Norfolk VA
    - skills DB
    - current projects
    - marketing
    - resumes
    - facilities data
    - prospective business areas
    - department briefings and presentations
- Code 70 SiteServer
    - SQL server with a Web front-end
    - departmental information
    - personnel database
    - department briefings and presentations
- Code 60 Intracom
    - Central portal for all Code 60 employees
    - Centralized news and locale oriented data
    - Code/Project/Branch wide news. User personalized.
    - Locale specific data sources
    - Personalization is integral to interface

    - Employee directory and Knowledge repository
    - Context, content, and semantic sensitive search engine for employees (Ask Jeeves contextual search engine)
- Maximo
    - Computerized Maintenance and Asset Management System, developed by PSDi
    - Track all project assets in our storerooms, operation locations (labs), integration areas, as well as our ships, sites and other external sites that we ship hardware.
    - Utilize a bar code reader/scanner to automate the receiving, moving and shipping process.
- Distance Learning
    - An initiative in collaboration with Old Dominion University and the Navy School House to provide sailors with an associate degree and an IT education.
- Code 63 JDMS (Joint Data Management Server)
    - Internet based data server
    - Sophisticated search utilities
    - Message conferencing
    - Integration of related data between otherwise separate documents or data sets
    - Engineering information/services
    - Configurations Baseline database
    - Online collaboration
- IT-21 Shipboard CM Website
    - Fleet NCR processing
    - Preferred products list (PPL)
    - Qualified parts list (QPL)
    - System/Subsystem Interface list (SSIL)
    - Virtual Workspaces (VWS)
- INFORM system tracks:
    - Personnel, security, skills, education, passport, minor property, time keeping, training, OGE450, POCs and medical history, travel, etc
    - ACCESS DB to be moved to a Oracle backend
- CorpWeb
    - Intranet web site
    - Each dept has own setup
    - NCR has Sitescape for marketing data
- Collaboration tools
    - Netmeeting
    - Whiteboard
    - Video over IP
    - Groupsystems

2.7.4. Technology and Cultural Awareness Issues

Two subgroups were formed for concurrent special sessions on technology and cultural awareness.

The technology session focused on analyzing the types of information needed for the Business Development topic, and to determine if this information already existed within a SPAWAR IT system. This session spent a lot of time discussing how and why a database or information repository would not satisfy the success factors. For example, there are several IT projects underway in various SSC-CHS codes to consolidate data on employee skills, projects, and business opportunities. However, these actually contain too much detailed data to allow someone to quickly determine the salient information they want and to contextually connect it with information from other sources. Indeed, the group decided that the Business Development KM need is for succinct summarized information.

Another impediment discussed concerns is the reluctance of SSC-CHS Codes to share their employee and project details with other Codes, or even less likely, with another Systems Center. This raised an important issue for achieving success in this pilot project, namely, people will not share everything they know so we must construct a set of processes and tools that don't require people to divulge sensitive information. For example, one solution was developed to get specific project and expertise from each Code based on asking managers to provide short one or two paragraph descriptions of their division's projects and personnel capabilities. These descriptions must be honest and directly address specific project tasks instead of broad generalizations.

Consequently, the group agreed that this pilot project doesn't need the full capabilities of the large IT projects, but needs simple and rapid ways to convey succinct information to interested parties. A major conclusion was that the pilot project should not and does not need to wait for the larger IT projects to complete, and that it can most likely use existing IT tools with only minor changes. Several ideas to do so were proposed:

- Start with manually collected summaries from division managers and post these on a simple web site
- Include snippets of customer information from people visiting or conversing with customers
- Possibly make the web site a Community of Practice so related threaded conversations and stored documents can be available with a contextually sensitive link
- Incorporate as much automatically pulled relevant data from the IT initiative databases as possible with only a small effort
- Use restricted sets of colleagues to define Instant Messaging groups to allow trusted real-time communications among project teams and associates, especially for field office people with Charleston personnel

The Culture and Awareness session focused on how to insert KM practices into SSC-CHS's business processes, and to make people aware that this pilot project is striving to improve their work lives. In particular, the session discussed the specifics of starting a Community of Practice

and ensuring that it is dynamic and engaging. The key results of this breakout group are listed below.

- Issues
    - Focus core competencies for one organization
    - Need a business plan and strategic plan
    - Act as a corporation
- Expanding business areas
    - Customer intelligence
    - Partner intelligence
- Business Development process
    - Process steps
    - SSC-CHS needs Better working relationships, more trust, better communications and awareness
    - No formal process in place
- Who are the critical people
    - Everybody
    - Business integrators
    - Command integrator – is there one?
    - Chief Engineer in each department
    - Professional and project engineers
    - Team leaders and branch heads
- Critical knowledge
    - Partner intelligence: within SSC-CHS and external
    - External business intelligence
    - Customer intelligence
    - Internal business intelligence
    - Funding
    - Core competencies (related to funding and other information)
    - Availability and schedules
    - Current project repository by DC office
    - Skills database by Code 40 DC office
    - Call center links systems experts and systems database
    - Information and privacy information could be integrated from Code 50

2.7.5. Knowledge Assets for Business Development

This portion of the workshop tackled the difficult task of distilling all the disparate information needs for business development into a short list of very high impact knowledge assets. The first activity defined knowledge assets, and differentiated them from merely important but uncritical information. Knowledge assets are distinguished by:

- Context -What was going on when the learning occurred?
- Distilled Learning - Guidelines, Questions, Checklists, Better Practices
- Performance Histories - Local stories & insights, i.e. what really happened and why
- People - Who to talk to when you really want to learn & apply
- Artifacts - Stuff you can reuse in electronic form

Indeed, it is essential to understand that KM is not about simply increasing people's access to information. On the contrary, access to large amounts of information is good when there is ample time to peruse it, but this access does not provide quick answers. KM seeks to provide these answers as rapidly and accurately as possible, either through stored pertinent information or links to other people who are likely to know the answer. This is the essence of the following quotation from a KM user in British Petroleum[1].

> "Wish all the stuff we read was so well put. I lived this process together with the folks that were quoted in the text. Not only did you capture the content, but also the souls of these people talking."

This concept was reinforced with a discussion of the Army's After Action Review method, which rapidly and simply captures the tacit knowledge gained by individuals while doing a task. The After Action Review poses four simple questions:

1. What was supposed to happen?
2. What actually happened?
3. Why is there a difference?
4. What can we learn from this?

Similarly, project teams can be debriefed at the end of the project to understand the key issues that led to success or failure.

1. What was the objective of the project?
2. What did we achieve?
3. What were the successes? Why? How can we repeat the success?
4. What were the disappointments? Why? How can we avoid them in future?

The potential knowledge assets identified for SSC-CHS's business development efforts are:

1. Project and Expertise Information
   - Organized by Command, Department, Division, and Branch levels
   - Descriptions do exist but they are not descriptive enough and are not connected across Codes, functionality, and location
   - Need Point of Contacts (POCs)

[1] From Kent Greenes on the success of KM at British Petroleum. Personal communication.

2. Services SSC-CHS offers
    - Organized by competencies and functional areas
    - An example was given of a cold call on a customer by Citech-D who needed answers immediately on special qualifications and existing projects to respond to the customer's needs and portray SSC-CHS as ready to perform the project. This information was not available during the customer meeting.
    - Need a brochure of 4-5 pages describing who SSC-CHS is and the major contracts available
    - Need product sheets (e.g. mobile computing), and CDROM samples,
    - Need resumes (no names) of key people
    - Need listing and description of major facilities, such as test beds
3. Business integrator knowledge and initiatives
    - Should take advantage of their knowledge and their work on business development
    - Create a virtual hot line to them
    - Set up a Community of Practice for them that others can look at in a read-only mode
4. Lessons Learned
    - For example, if there is a No bid decision on a RFP, why was this decision made and by whom? At a later date, have the criteria changed? Check with POC before wasting Bid & Proposal funds on a poor opportunity.
    - Which customers don't have funds
    - Assist with generating valid cost estimates for proposals
    - What are the key customer characteristics: cultural - DoD services, foreign
5. Funds trace, i.e. who has money to spend and on what?
    - How do we address these?
    - How do we get this?
    - Insights early in POM
6. SSC-CHS Strategic Plan
7. Industry Business Intelligence
    - Where is the industry going
    - Who is doing it
8. Marketing checklist, ROI, resources

The proposed knowledge assets were further discussed, refined, and prioritized using Groupsystems software. This allowed the workshop participants to consider their preferences and enter comments associated with each choice. A scale of 1(low) to 10(high) was used to assign a level of importance to each knowledge asset. Forced ranking was not used. Therefore, several knowledge assets could receive the same value from each voter. The figure below shows the results of this vote.

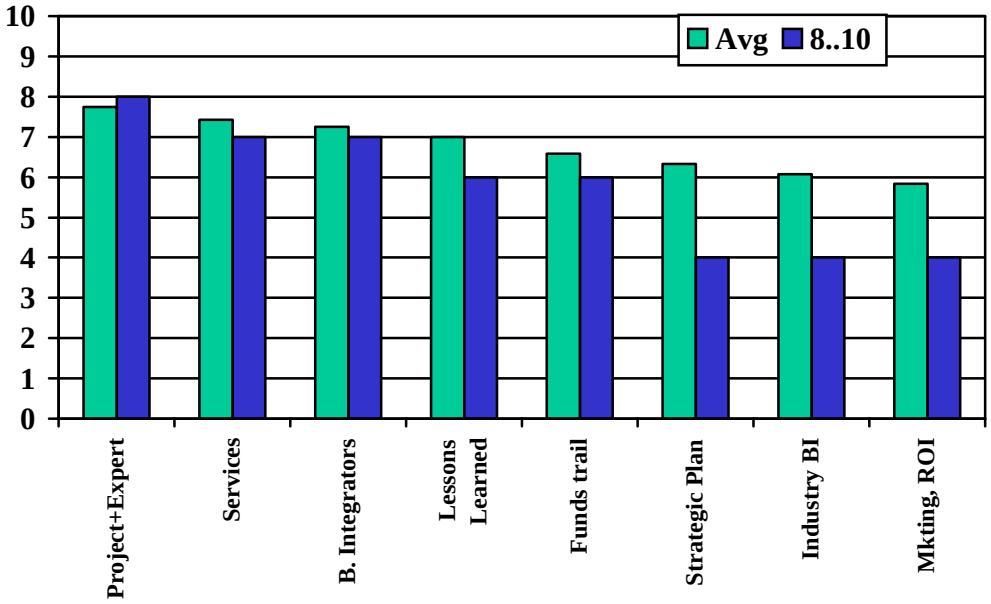

Figure 7 Ranking of knowledge assets for business development. The average vote value is shown in green, while the number of high importance votes (8-10) are shown in blue.

The top ranked knowledge asset is SSC-CHS project and expertise information. The comments associated with this asset are listed below.

- Who (Department, Division, Branch) is working on what project?
- Identify expertise to the division level. Allow division head to manage their assets.
- Historically, what projects/programs have we worked on?
- Need narratives describing project, functions performed, volume of revenue, years of involvement
- Skills and expertise, functions performed
- Corporate past performance, a resume of sorts that captures our successes, time to implement/dollar threshold/ metrics of work performed so mgmt can compare what we do and how. This would help obtain best practices internally and incorporate folks good ideas. If the metrics are short and sweet and easy to capture it would be better for the field. This would also help codes that are less mature in various areas.
- System equipment experience
- Business integrators can play a more active part in the codes, helping us gather info, they could have a smaller list (database) of resources available and POCs for each so we can reach back if we need info quickly.
- We needed to know who might have the expertise to team with us to install a video monitoring system for Army Day Care centers for (1) marketing (been there/done that), (2) standardizing the configuration, (3) standardizing the Army configuration across the world (multiple project came to SPAWAR for similar work), (4) defining the state of the art technology to be used, (5) minimizing the travel costs for installation, (5) maximizing

the number of systems installed for the amount of money available, (6) optimizing the contracting for the systems, ...
- department, division or branch descriptors with POCs for each major area of expertise
- Chief engineers should be sources of new technology information.

2.7.6. Business Development Scenarios

The importance of a knowledge asset depends on the context and timing of its use. Thus, it is not enough to just identify what pieces of information can be distilled and consolidated into knowledge assets and content centers, but we must understand how and when they are likely to be used to ensure that they are organized and packaged appropriately.

This portion of the workshop developed the scenarios used during business development activities. These are:

- SSC-CHS puts on conferences for customers - Provide briefings and demonstration of SSC-CHS products; these are no longer done since the last conference had poor turnout (1 year ago)
- AFCEA, FOSE, etc conferences - Show the six most marketable technologies; Use a six section 20'X20' booth
- Gather customer intelligence from on-site team leaders
- Publish articles in trade magazines to show what you do. This leads to customers calling SSC-CHS.
- Cold calls - search out prospective customers
- Support contractors provide leads
- Gather intelligence of potential new project opportunities through word of mouth
- Leverage charter work at SSC-CHS

These activities were consolidated into the following top five scenarios, and then prioritized for their current importance to SSC-CHS business development success.

1. Word of mouth
2. Business intelligence: "eyes and ears open"; Commerce Business Daily: can't bid but gives awareness of customer interests
3. Customers call SSC-CHS
4. Repeat customers: expand work + feedback
5. Marketing training

For example, people are most interested in having concise and short descriptions of the services offered by the entire SSC-CHS organization while they are engaged in word of mouth activities for business development. This does not diminish the importance of the other knowledge assets, but shows that the value of any information depends directly on how and when it is needed and used. The comments in figure 8 are key characteristics of the knowledge asset for ***this*** business development scenario. Thus, an example of the type of funds tracing knowledge desired during word of mouth activities is that it is a ”big project but the customer doesn’t have funds and/or they generally use other organizations and not SSC-CHS”. Similarly, the other comments relate to the importance of knowing that: the ideas being discussed are aligned with the organization’s strategic plan; the business integrators are not working on this business idea in a different way; and, there is knowledge in the organization about the customer’s particular key issues, politics, and culture in a Lessons Learned content center.

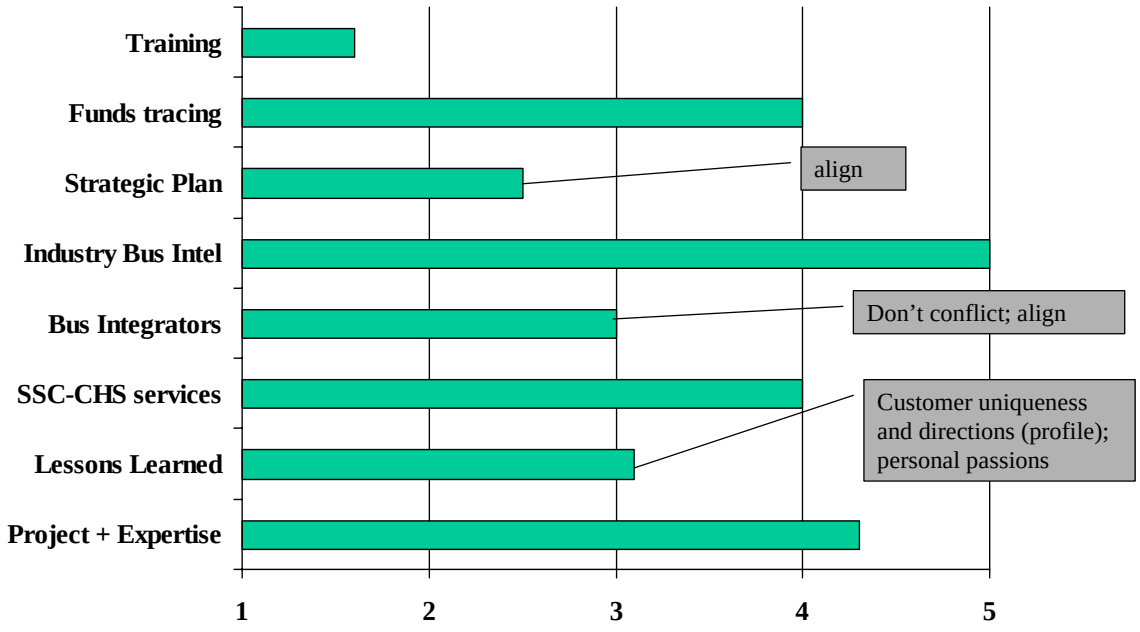

Figure 8 Prioritization of knowledge assets for business intelligence activities.

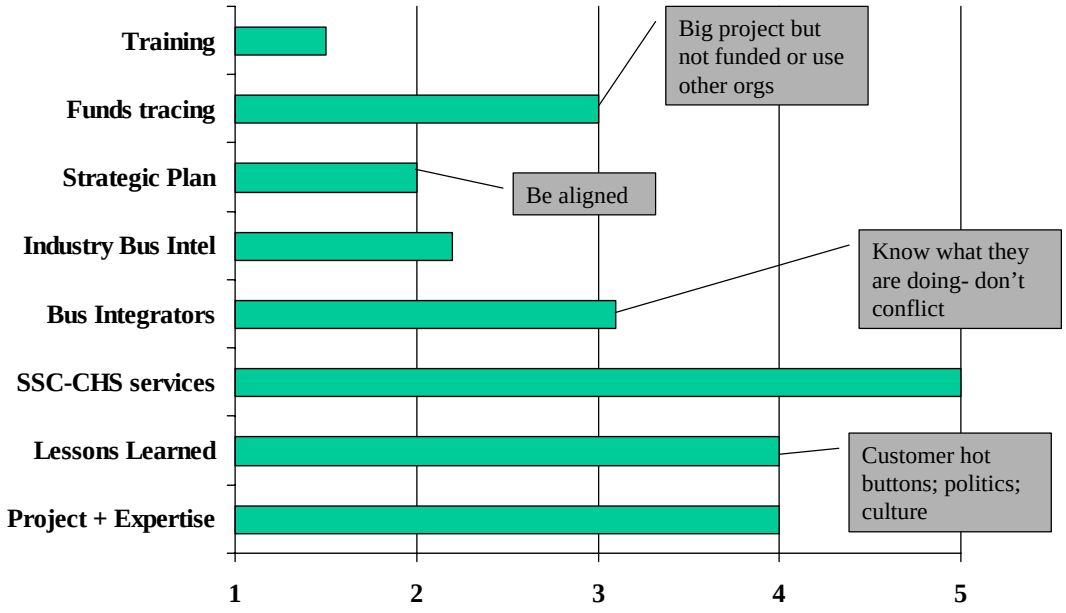

Figure 9 Prioritization of key knowledge assets during word of mouth activities for business development.

2.7.7. Metrics

Metrics play a pivotal role in Knowledge Management since the complexity and large variety of possible knowledge assets precludes a standard requirements definition process. For Knowledge Management Systems (processes and tools), many of the critical requirements cannot be articulated before hand since they are so dependent on the context of use and unspoken tacit needs. Consequently, metrics provide important feedback that can be used to continuously modify and adapt the system as the user's needs become known.

The KCO model defines three types of metrics: outcome; output; and system. These differ by which level of the organization they consider and monitor. Outcome metrics concern the overall organization and measure large scale characteristics such as increased productivity or revenue for the Charleston command. Output metrics measure project level characteristics such as the effectiveness of Lessons Learned information to capturing new business. System metrics monitor the usefulness and responsiveness of the supporting technology tools. As stated in Oparea 3, Opscenter Bravo of the KCO model:

"Performance measures are the "vital signs" of the Knowledge-Centric Organization. Properly designed, they provide three types of indicators: Outcome (Strategic) Measures, Output (Process) Measures and System Measures. Distinguishing between the three types of measures is important.

Outcome Measures gauge mission accomplishment effectiveness. For instance, a successful rescue mission might be indicated by no lives lost and return of aircraft and crew. For KCO implementation, a successful outcome might be a measurable improvement in the core strategic process, reduced cycle time and more effective decision-making.

Output Measures gauge efficiency of process progress. For example, a Naval Aviator conducting an instrumented transit scans various cockpit instruments to gain a sense of position, direction, fuel consumption and elapsed time. These instrument readouts represent output measures because they provide the pilot insight to the flying process. For KCO implementation, output measures might be user participation in knowledge-sharing processes and contribution across demographics. Output measures are important because without user participation in the KCO process (output), we can not expect improved decision-making capability (outcome).

System Measures gauge the operating capability of systems over time. For example, a knowledge based web-site unavailable due to technical failure of the network or server (system performance) can impact user participation (output)."

Outcome metrics were not considered at this time since the initial objective is to use the metrics to drive continuous adaptation of the Knowledge Management System.

The consolidated set of metrics for the pilot project are:

<u>Output</u>

1. Number of successful leads
2. Number of new teams (across SPAWAR) on new business versus KM usage and time in place
3. Usage of Lessons Learned
4. Interview statements of avoiding mistakes, developing alternate approaches, creating best practices from Lessons Learned
5. Projects and Expertise: response rapidity
6. Projects and Expertise: response pertinence
7. Number of successful business intelligence qualified leads from onsite team leaders versus KM usage/time in place
8. On site team leaders say KM helped
9. Number of customers & $$: won, lost, kept vs KM usage/time in place from business intelligence
10. Amount of business helping others in KM

<u>System</u>

1. Usage of pilot project web site

2. Ease of navigating web site: length of navigation time, number of clicks to find information, difficulty [surveys, interview, pop-ups]
3. Survey on usability
4. Ease of information entry
5. Currency of information
6. Searching: precision, recall, pre-filters

2.7.8. Interviews

The first phase of collecting assets concentrated on creating video interviews of people for Lessons Learned and short statements of key insights. This is a rapid way to get high-impact knowledge that can benefit large numbers of people, as discussed in the KCO model:

> "A combination of group interviews and one-on-one interviews are the best method for gathering comprehensive data on knowledge, skills and information (KSI) requirements."

The KCO model CDROM provides tools to help plan interviews. The Profiling Tool suggests questions to ask and the type of answers the interviewer should expect to receive.

> "The Profiling tool provides pertinent questions to interview key personnel to identify knowledge, skills and information requirements. The tool is a basic questionnaire that takes the interviewer and interviewee through a series of questions pertaining to actions accomplished on the job and the information necessary to complete those actions. It will assist acquiring the necessary information about knowledge requirements from key personnel."

The team members submitted proposed questions that were reviewed and prioritized by the KM team. The specific questions used for each interview are chosen according to the experience and knowledge of the interviewee. Thus, each interviewee will not be asked all questions, and the list was culled to a smaller set for each interview.

1. What lessons have you learned about how to identify a good lead for capturing and growing business?
2. How do you get leads?
3. What lessons have you learned about how to successfully follow a lead for capturing and growing business?
4. What unique approach works for you that always captures the customer's attention?
5. What lessons have you learned about how to expand work with an existing customer?
6. How do you determine which new customers to target for your product areas?

7. How do you identify who to target on cold calls?
8. How do you stay aware of the myriad products and services that SSC Charleston can provide?
9. How do you team within your organization and with others across the Command to capture business opportunities?
10. What are effective means of gathering client/customer/competition intelligence?
11. What is the Integrated Product Lab, how is it useful for testing SSC Charleston projects, and what makes it unique ?
12. What is the single most important piece of advice you can give to SSC Charleston people?
13. What rule of thumb do you use when marketing with all new customers?
14. How can we better coordinate our divisional marketing efforts?
15. What matrixes are in effect for marketing/sales management?
16. What partnership strategies can be shared throughout the organization?
17. What approaches have you used that were not successful winning a customer's business?
18. What tips have you found effective for customer cold-calls?
19. Who are the marketing/sales personnel within each division?
20. What is the corporate plan for overcoming business losses created by NMCI? Move to other DOD Services (i.e., Army, Air Force)? If so what is in place already?
21. How do you convey the "can do attitude" to customers?
22. Is the Business Integrator the primary emphasis of marketing within SPAWAR? If not what is? If so, how can we work across department business integrator boundaries?
23. Is there an official client/customer database?
24. What are the most effective methods you use to keep existing customers happy?
25. How does business development differ for small, medium, and large opportunities? How much time is needed and what people should be on the marketing team for each type?
26. What information do you need from the technical staff so that you can most effectively present the products and services offered by SSC-Charleston?
27. What is your first step in developing business? Do you have a process (flowchart/outline) in place?
28. What lessons have you learned about how to help a customer plan, budget, and develop their programs for you to capture and grow your business?
29. Who and where are the SPAWAR personnel colonizing customer organizations?
30. How does the Integrated Product Lab discriminate SSC-Charleston from other government labs?
31. As a new employee, would a marketing lessons learned file help you?
32. What is the average cost of marketing within SPAWAR by Department, Divisional? What is the ROI?
33. What customer care processes are we utilizing within SPAWAR?
34. As a new employee, what kind of tools would help you when you are in the field?
35. How do you determine and to what level of briefing material would be sufficient?
36. What are the different areas of business development, and which is your expertise in?

Each code representative identified several people from their respective codes as potential interview subjects. These candidates were reviewed by the pilot project team to create the final

list of interview subjects based on availability, expertise, and pertinence to the chosen topics, who were:

1. Terry Simpson
2. Will Gex
3. James Ward
4. John Linden
5. Capt Ron Crowell
6. Myra Rice

The set of 36 questions generated by the pilot project KM team was used as a basis for the interviews. The interviewees were given the questions ahead of time and asked to prepare responses for the questions they felt most comfortable answering. Thus, we did not expect nor want each interviewee to answer all 36 questions, but only those that covered the special expertise of the person. This is an important objective of this phase, namely, to convey the importance of capturing succinct transferable knowledge rather than complete stories. In addition, we asked the interviewees to includes topics not covered by the questions but that they felt were very important.

The video interviews were reviewed by the workgroup using the criteria to find comments that were especially insightful that would help many others in SPAWAR understand and perform business development better. Consequently, much interesting information may not be kept since the threshold for widely beneficial knowledge snippets is much higher than for experienced comments.

This editing does not devalue the comments and knowledge of the people interviewed. Rather, it emphasizes the significant difference between Knowledge Management and information repositories that can store a lot of relevant and interesting information. KM focuses on providing answers to people's knowledge needs in as timely and precise a manner as is possible. Indeed, the people interviewed were chosen for their extensive experience and knowledge fully aware that the KM system cannot contain all of their insights.

Various options were discussed for the final videos, including:

- Organize by the interview questions so users so get answers from several people to the same question
- Have question announced before the answer
- Don't use complete interviews since people want specific quick answers without having to listen to the entire interview
- Cut interviews in individual questions but also keep the full interview in case someone wants to watch it
- Reinforce the Communities of Practice

Examples of the questions covered in the videos are listed below. For each question, the experts who answered the question are listed along with a short statement from the answer and the play time of the segment in minutes:seconds.

1) What lessons have you learned about how to identify a good lead for capturing and growing business?
   a) John Linden: "We work heavily within our industry partners and universities to determine what the next technology curves are going to be. Understanding what the customer wants today and what the customer is going to want in the future, keeping yourself abreast of technology change is absolutely essential.. "{1:13}
   b) Terry Simpson: "Not every customer has a problem that we can solve and not every customer has the funding requirements. It is ok to be selective about what we go after. We can't go after everything; we have to prioritize. Be objective with customers. "{0:45}
   c) Will Gex: "In capturing leads, you should try to avoid cold calls. There is a very low rate of return. It is better to grow business through existing customers. Trust is the key ingredient. With a cold call you have to develop that trust, which can be difficult from the beginning. With existing customers, that trust should already be in place." {0:54}

2) What unique approach works for you that always captures the customer's attention?
   a) James Ward: "What I like to bring to a customer, that is unique, is that, first off, I go over with them the intellectual capital that we bring to the table for any business initiative. Secondly, I like to show them that we have actually done this type of work before. And thirdly, that we have a good understanding of the requirements that the customer has." {2:02}
   b) Myra Rice: "I do a lot of research to make sure, prior to going to visit the customer, I find out as much as I can about their business and their organization. I do an initial call to get a feel for what that person is looking for so when I get into the organization I make sure I take the right team of people." {0:56}

3) What lessons have you learned about how to expand work with an existing customer?
   a) Terry Simpson: "The key to expanding business with existing customers is focusing on, and constantly nurturing a strong business relationship. We have to be the "go to" people that can make our customer's jobs easier and answer their requirements." {0:26}
   b) Will Gex: "We are going to have the most success expanding our business through existing customers. As you work with customers, they begin to trust your judgment. Customers will talk about their needs. This can lead to other opportunities with that customer or with other organizations. Expanding existing customers is key to expanding our workload." {2:02}

4) What are effective means of gathering client/customer/competition intelligence?
   a) James Ward: "Every year Navsea publishes an ACAT index. The ACAT index is a primary source which I think is crucial to our acquiring business intelligence. Secondly would be our network that we have established with our counterparts. SPAWAR is here to support N6 and N8. We need to be involved in fleet conferences. These are three ways to gather intelligence". {2:06}

b) John Linden: “Another thing that we have developed is a marketing checklist. The big problem that I have seen over many years, is going into a customer's community to market or develop new business without having done the exploratory things. I need to get the right answer to questions before I proceed down the path of spending production overhead money. ..”. {1:59}

5) What is the single most important piece of advice you can give to SSC Charleston people?
   a) James Ward: “Business development typically is not captured with slick brochures, glossy pamphlets, or flashy cards. Business development is really based on the intellectual capital that you bring to the table. People don't often think of training and equipping the workforce as a marketing tool, but it very much is....”{1:38}
   b) John Linden: “The most important thing is to learn to listen to the customer. Understanding the customer's needs comes from listening and knowing what questions to ask and building a relationship with the customer based on trust. There is an expectation on the part of the customer. They ask for a service and they expect to get it at a reasonable cost and in a timely manner....” {1:56}
   c) Terry Simpson: “Our people must understand their work areas and understand the big picture of our command. We must use all of the avenues for support and assistance that we have. Communication is the key. Don't be afraid to ask questions. Our command can meet almost any need that you come across....” {1:03}

2.7.9. Projects and expertise synopses

The first drafts of project and capabilities synopses were reviewed and discussed in detail to determine if they conveyed sufficient knowledge and were succinct. Several examples are listed below along with the team’s comments.

1. J50 : Good description but should add Points of Contact and possibly their top 5 programs to truly identify the department’s focal areas.

   The Communication Systems Department (J50) provides innovative systems engineering and integration expertise for communication and information transfer systems across the frequency spectrum and around the globe. Our technical expertise is aligned to engineer, implement, and support telecommunications and switched networks, integrated networks and network management systems, tactical and expeditionary communications, satellite systems, advanced technology communication systems development, and network applications, services and operations. This department applies knowledge and expertise with service-specific, Joint, and coalition interoperable communications architectures

to deliver and integrate state-of-the-art communications capabilities to the warfighter.

2. J53 : Good description but need to expand acronyms.

   The Tactical Communications Division (J53) provides support in all areas of fleet and submarine communications with a frequency range between 30 hertz and two gigahertz, including life cycle engineering for ship/submarine interior and exterior communications equipment and systems. We provide global, on and off-site, shipboard technical assistance, advanced products test and evaluation, and overall communication system signal analysis, from baseband signals to the radio frequency leaving the platform or shore station. Our four specific areas of support include acquisition engineering agent, ISEA, technical support agent, and local area support. We are also the ISEA for the ELF/FVLF/LF/HF/UHF communication systems and an integral part of the department's integrated products team.

3. J60 : Good.

   The Command and Control Systems Department (J60) designs, develops, tests, acquires, deploys and upgrades tactical and non-tactical information systems employed by U.S. Navy, Marine Corps, and Joint Force Commanders systems which provide effective direction and control of sea, air, and land forces at all levels of the national defense organization. These state-of-the-art systems typically receive, classify, and integrate data from many sources to produce coherent graphic and statistical displays of tactical situations as they develop, in real time. This capability enhances the force commander's decision-making capabilities and his grasp of threats, risks and options. These systems are secure conduits subordinate commanders can transmit their unit's operational orders, and then transmit on-scene assessments to strategic commanders. Our focused efforts are extended to various DoD and other federal agencies for successful mission accomplishment with leading-edge technology systems and engineering practices.

4. Code 511: There is an impression that they overlap with a lot of other branches. Is this true? If so, is it something that needs to be changed or is it just part of the SPAWAR business model?

   The Tactical Switching Branch (Code 511) provides Automated Digital Network Systems (ADNS) and Integrated Network Manager (INM). ADNS connects Navy shipboard networks to other networks for receiving and transferring data of various classification levels. INM is a software suite built upon HP's Network Node Manager (NNM), that remotely monitors and manages ADNS components and interior shipboard LANs using a common web-enabled interface. It provides connectivity status, device health, and historical data for significant network devices such as servers, workstations, routers, and switches.

5. Code 514: Not a good description. It doesn't provide any insight into what they do.

   The Information Infrastructure Branch (Code 513) develops and maintains the technical expertise in base-level voice, video, data and imagery distribution systems with the migration towards full implementation of Synchronous Optical Network (SONET) and Asynchronous Transfer Mode (ATM) technologies on base-wide, large bandwidth transport systems.

Subsequently, the pilot project team collected synopses for every branch in the SSC-CHS command. These were organized into a database and posted on the Corpweb intranet Knowledge Management web site. The synopses are available on the KM web site at https://corpweb2.spawar.navy.mil/kme/ or at http://corpweb/kme/. A knowledge map is being created of all the owners of the critical knowledge within SSC-CHS. This knowledge map will also serve as the rapid pathway guide to continually updating and improving the synopses. A color coding scheme will be used to indicate the currency of the information with the following timing:

- Green – current. Lasts for 4 months
- Yellow – almost out-of-date. Lasts for 1 month. An automatic email will be sent to the asset owner.
- Red – out-of-date. An automatic email will be sent to the asset owner.

2.7.10. Knowledge Management Environment

The Knowledge Management Environment (KME) was built as a simple web site to house the knowledge assets collected. The KME is part of CorpWeb and will be expanded and modified based on the metrics defined and described earlier. The following figures show sample screens from the initial version of the KME.

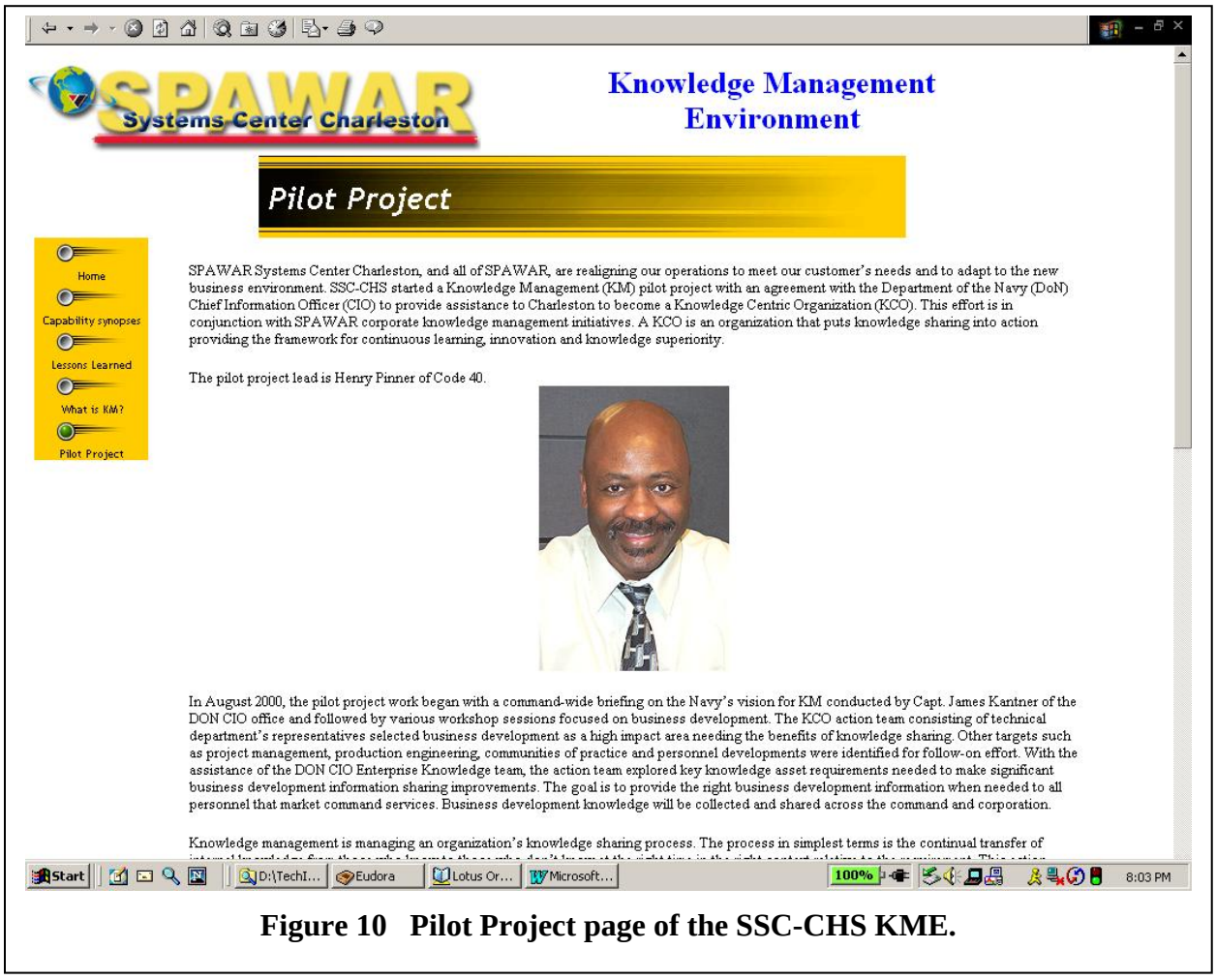

Figure 10 Pilot Project page of the SSC-CHS KME.

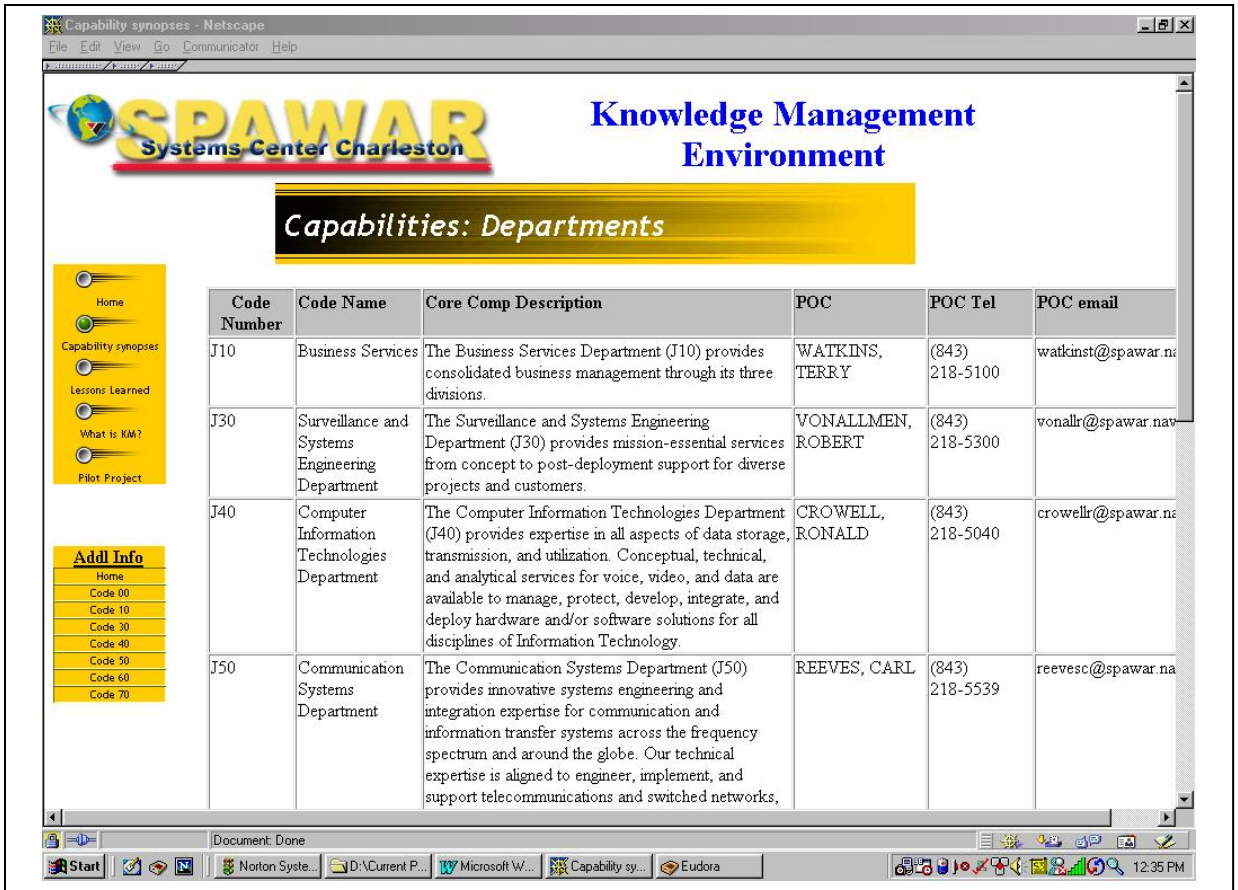

Figure 11 Capabilities synopses page for SSC-CHS Departments. Other pages display synopses for divisions and branches.

2.7.11. Community of Practice

Another key component of the pilot project is the Community of Practice that will be hosted on the web-based system. The Community of Practice must be carefully designed and maintained to ensure that users find it useful, enjoyable, and valuable. The group identified the following issues for getting people involved in a Community of Practice for the pilot project.

- Start a branch Head COP so they can share issues and concerns (commiserate)
- Make it fun and useful
    - Meaningful activities: action items
    - Interesting subjects: learn (What's in it for me)
- Sure to get answers from colleagues: somebody has to be responsible to get answers!
- Post and discuss "hot" issues and facilitator

- If I get results, I would go there a lot
- Need answers not just the ability to chat

There is a formal program to build Communities of Practice within SPAWAR and the Department of Navy. Several members of the SSC-CHS KCO Pilot Project team are also members of these Community of Practice teams. Although the formal Community or Practice committees are addressing the larger issues of how to start and maintain these activities, the pilot project needs to implement a few Communities of Practice to support the building of the KCO. Consequently, the team discussed, identified, and assessed a variety of topics that could be suitable for the launch of the web site, including:

- Hot topics
    - World Bank experience shows that the Communities become a source of knowledge, but that you must get experts to participate and share their knowledge
    - We need important topics that people are grappling with to get as much attention and participation as possible
- Methods
    - Use an inaugural Community of Practice day with great fanfare
    - Start each Community with an online Question and Answer chat session with a panel of experts, who can be geographically distributed
    - Have an expert from each SPAWAR command to foster corporate collaboration and test scaling of the Charleston pilot project to corporate SPAWAR
    - Capture Q&A sessions and transform into a Frequently Asked Question database that stays on the Community web site
- Horizontal Integration
    - Major topic in SPAWAR
    - Chief engineers are experts
    - Issues: Interoperability, Support to Battle Group, Goals and objectives of HI, Planning for installations, Collaborative engineering
    - HI is not a big concern for all SPAWAR locations
- Production engineering
- Rack and Stack
    - Modular construction and testing strategy
    - Might be specific to Charleston
- Contracts
- Information security
    - Viruses – how to protect workstations
    - People who have responsibility Don't have control
    - PKI
    - Can access be given to government network to off-site contractors
- Financial
- Project management – how to do it better
    - New chapter of Program Management Institute in Charleston, and there are a lot of SPAWAR members

These ideas were filtered into the following initial set of topics for Communities of Practice.

- Business development – this is the primary theme of the pilot project and should be reinforced with a Community.
- Project Management – already have interest expressed by Charleston people
- Engineering

An online session with business development efforts was held on 22 Feb 01 for one hour to generate interest in the new Knowledge Management Environment, and in particular, several Communities of Practice. Two Communities of Practice: Business Development and Project Management were started although only the Business Development community was widely publicized because of the online session with experts. The statistics for both communities during the one hour sessions are:

- 101 Total Registered Users, 33 Total Posts.
- Code 10 users - 1
- Code 30 users - 6
- Code 40 users - 43
- Code 50 users - 11
- Code 60 users - 17
- Code 70 users - 11
- Unknown users – 5

2.8. Lessons Learned

The pilot project is far enough along that a review can yield important conclusions. Thus, the workshop participants were asked to openly comment on the project, and to point out good and bad aspects. This feedback is valuable for two reasons: 1)it produces a Lessons Learned that can be used as the KM initiative expands outward from the pilot project team; and, 2)it allows DONCIO to improve the KCO model and implementation methods.

2.8.1. Local project team comments

- Threaded discussions for Communities of Practice
  - People are too busy to do much besides their core work
  - Possibly set aside a time dedicated to this activity so that it is part of people's jobs, such as is done with the Friday Brief
  - Discussions should be integrated with email display on desktop so people can scan them the same way they do email for interesting topics
  - Add daily alerts to personalized Corpweb homepages on subscribed interests
- Pilot project timing
  - The pace should be faster
  - Trying to arrange workshops with the pilot project team present led to inevitable delays because of conflicting schedules.
  - Look for a quick win on a smaller project that is already underway
  - Discussion frequently went on tangents that slowed decision making but tangential discussions were important to explore new culture and ways of thinking
  - Professional facilitator could help meetings progress but a facilitator's lack of subject matter knowledge will hinder the group's ability to make decisions on new cultural issues and processes
  - DONCIO should provide templates of new processes and tools that can be implemented right away so pilot project team can learn while implementing these templates instead of learning and creating new processes
  - Need a short cookbook of detailed processes useful for everyday workflow
- Pilot project content
  - Need something tangible to work on from the beginning to maintain people's interest
  - There is a lot of great information on the CD but it needs to be organized so that people can quickly get an overview and then get more detail when it is needed- need a cookbook with a good Table of Contents and Index
  - Review reports should be consolidated and concise
  - Need to answer "what's in it for me?" from the start in everyday terms
- Pilot project outcomes
  - There has been a major shift in understanding of KM and the need to do more than manage information, and to include people-based processes
  - This was an overhead activity from each department's own funds so it reduced participation because it conflicted with the need to minimize overhead costs
  - Management should show support by providing funding for this activity
  - This effort must grow outside of the pilot project and become part of the normal workflow
  - Pilot project team should become the new teachers and guides to bring KM to their groups
  - Business Integrators have started a new project that grew out of early KM workshops that seeks to manage information but that allows people to connect to the right person at the right time instead if just relying on the information management system

2.8.2. DONCIO team comments

- The period of time from the beginning of the project to disseminating the first knowledge assets should follow a schedule of approximately three months working through any schedule problems
- A tangible product should be built from the start of the pilot project and continuously improved
    - The DONCIO team should help build some products (e.g. simple web sites, databases, collaboration sessions) when it will overcome time hurdles for the local project team even though the local team should build as much as possible to increase their learning
- Although team members may wish to speed up the project by using common meeting methods (such as professional facilitators, small subgroups, focused agendas, etc), these should be used sparingly since impromptu discussions are an important part of exploring new ideas
    - Too short a decision making process on what knowledge assets, tools, methods, and metrics are most important will lead to an incomplete understanding of the key differences between information and knowledge.
    - People need time to accept new cultural and business process concepts
    - A translation of KCO objectives into standard daily business processes should be developed to quicken acceptance of the KCO
- Communities of Practice should begin with a clear demonstration of specific benefits to potential participants to get them involved in addition to the general awareness briefing.

2.9. Conclusion

The pilot project succeeded in achieving its goal to spread KM practices and understanding in the DON. This goal is accomplished through the primary objectives.

1. Create awareness of principles and benefits of a KCO - Multiple awareness briefings were held to explain KM and the KCO across SSC-CHS. The KCO model CDROM was loaded onto a SSC-CHS internal server with announcements made on the intranet (Corpweb) and in the print newsletter. Also, by including members of each SSC-CHS department on the pilot project team, a knowledgeable representative was present in each department to spread awareness.
2. Build a functioning KCO testbed to serve as a growth center for the entire organization- An extensive KCO process effort occurred that reoriented people towards understanding what knowledge assets are, and how to identify, prioritize, collect, organize and disseminate them. The pilot project collected succinct statements of project and expertise capabilities of all SSC-CHS branches based on the project team's assessment of what was valuable and mutually beneficial. These knowledge assets were placed on a simple web site on Corpweb and organized according to a task based scheme determined by the

project team to be the most intuitive for users. The new KM Environment's URL is: https://corpweb2.spawar.navy.mil/KME/

3. Train pilot project team to become in-house KCO experts – This is potentially the most important accomplishment of the pilot project. The local pilot project team members clearly understood and could articulate the critical KCO aspects at the end of the project. They did an exceptional job learning and understanding the core principles of KM and KCO and became effective leaders of the KCO process.
4. Review KCO model performance and modify- The KCO implementation process was reviewed by the SSC-CHS project team during the last workshop. The team made specific comments on which parts worked well and which need to be improved, which are listed in this report. The key critiques showed that the process works very well although it should be faster and have concrete deliverables generated at each stage rather than waiting to the end of the process. An important portion of the KCO process which cannot be accelerated despite user's desire to do so is the cultural change required to have people understand the differences among knowledge, information, and data and the need to share some knowledge even if there are legitimate reasons not to share all knowledge.
5. Develop Lessons Learned from KCO implementation- Preliminary Lessons Learned have been determined and listed in this report. A more thorough analysis of the pilot project will be done after other KCO implementation projects are performed, which will produce a complete set of Lessons Learned.

This pilot project is part of a larger corporate SPAWAR Knowledge Management initiative and should plan on aligning the processes and tools used and specified with the corporate program. In particular, the planned transition to corporate SPAWAR of the Lessons Learned and methods developed during the pilot project is an important phase of building a KCO in SPAWAR. In addition to the benefits of sharing the pilot project knowledge, the different needs and perspectives of corporate SPAWAR and the Systems Centers must be reconciled to ensure a successful and sustainable KCO across SPAWAR

The Lessons Learned and methods gained in the SSC-CHS pilot project will formally be transitioned to corporate SPAWAR with DONCIO assistance. The kick-off meeting for this transition project was on 19-20 Mar 01 in San Diego.

The metrics defined in an earlier workshop should be implemented and tracked. This will not only allow us to monitor usage and gauge preferred knowledge assets, but permit the team to adapt the knowledge collected, its organization, and distribution methods for the most effective system and processes.

3. Workshop 1: Knowledge Management Project Kick-off Workshop

The workshop was held on 22 August 2000 at SSC-Charleston in North Charleston, SC.

3.1. Objectives

This was the initial working session of the joint DON CIO – SSC-CHS KM project. Several previous meetings were held to arrange the collaboration between DON CIO and SSC-CHS, and to coordinate this project with the broader KM program underway at SPAWAR headquarters.

The objectives of this kick-off session were:

- DON CIO presents KCO model and implementation strategy
- DON CIO assesses SSC-CHS's KM readiness using surveys
- SSC-CHS describes business needs
- SSC-CHS describes existing KM related programs
- SSC-CHS describes existing technology
- Potential project ideas are analyzed and discussed
- POCs are identified for both teams
- Follow-up tasks and schedule are defined

3.2. Results

During the first part of the workshop, Capt. Kanter and Capt. Ross gave presentations of the DON CIO KCO model and implementation plan. These presentations provided a common understanding and frame of reference for the two teams on the meanings and expectations for the KM project. In addition, Dr. Malafsky gave a short presentation on the types and uses of IT tools for KM.

3.2.1. Surveys

Two surveys were given to the SSC-CHS participants. These surveys were developed by DON CIO for use throughout the Navy and Marine Corps to help gauge the existing KM status of an organization, and to monitor progress and guide assistance efforts during an organization's KM endeavors. One survey focused on assessing the readiness of the organization by assessing their attitudes towards their organization's willingness to promote KM activities. The second survey measured the group's beliefs in the relative importance of the components of the DON KM framework, and is an indicator of the general appreciation for a balanced approach to KM.

The primary results of the first survey are:

- Most people don't think KM is well understood throughout the organization
- Most people are unsure if there is sufficient funding to accomplish the KM objectives
- Most people recognize the importance of teamwork in KM
- Most people think the organization has adequate resources to support IT

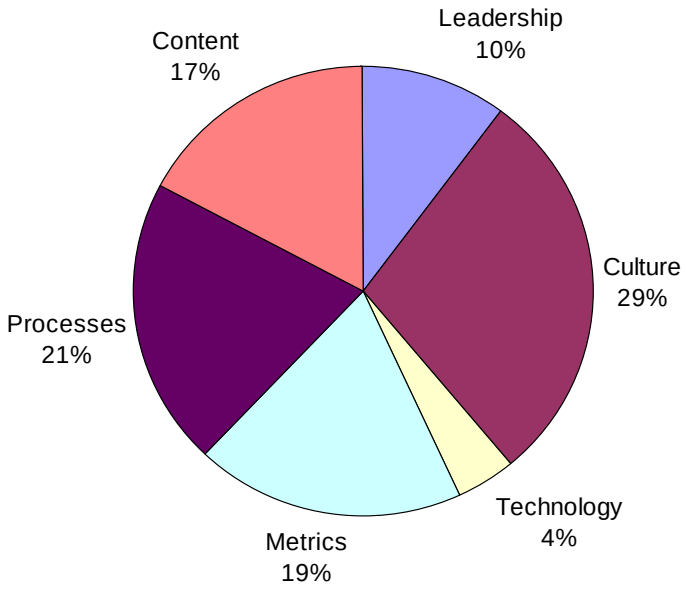

Figure 12 First survey results from SSC-CHS on which components of KM are critical for success.

Figure 12 shows the survey results on the relative importance of each of the KCO model's components. The primary results of the second survey are:

- Leadership: Most people do not think leadership is as important as the other components except when related to technology
- Culture: Culture is considered a very important component and was overwhelmingly chosen against all the other components
- Technology: Most people think technology is the least important component

These two surveys show that the SSC-CHS KM team is a very well informed and thoughtful group that has a good understanding of KM and its benefits. In particular, the framework survey results show that SSC-CHS is well ahead of many KM initiatives because of its awareness that KM cannot be achieved with an IT tool alone.

SSC-CHS made several good suggestions to improve the use of the surveys for a larger population at SSC-CHS, including:

- Adding serial numbers so that the surveys can be correlated to specific groups and types of workers
- There should be additional questions on demographics

3.2.2. Identifying Potential Projects

A 90-minute session was held to have the SSC-CHS team identify a few key business areas that can strongly benefit from implementing the KCO model and a KM system. The differences between an information system and a KM system were described at the beginning of this session to ensure that all participants understood this critical distinction. The goal of a KM project is not to merely develop information repositories and databases, but to find methods and processes that allow an organization's members to easily and quickly find and access contextually relevant, focused pieces of information rather than a large amount of potentially relevant information. Knowledge-Centric Organizations connect people and deliver them the right information at the right time for decision and action. They also learn constantly, innovate continuously, make quality decisions faster, reduce product and service cycle times, and accomplish their missions more productively.

The following characteristics of a good KM project were used to guide the discussion of potential KM focus areas.

- High business impact (easy to see success)
- Strong advocacy within leadership
- Project results and lessons will be useful for other KM projects
- Feasible

The business areas identified are:

1) Business development
    a) Capturing business opportunities
    b) Identify new markets
    c) Expertise: identify, organizational depth
        i) Map to opportunities
        ii) Find deficiencies
        iii) associate with training and staffing
    d) Resource mgmt
    e) Historical info on opportunities: Lessons Learned
    f) customer characteristics, cost models
    g) Technology status

   h) Customer feedback: Lessons Learned
2) Project management
   a) Flexible data visualization and analysis: customized
   b) Synergy among projects (Lessons Learned)
   c) Hierarchical resource mgmt
   d) Timeliness of getting official info
      i) phone, email
   e) training
   f) “they”, as in who are they?
   g) answer button(s)
   h) PM process modeling and improvement
   i) Lessons Learned; “experience speaks”
   j) contractor skills, history, Lessons Learned, contract issues
3) Personnel
   a) Training
   b) Experts
      i) Lessons Learned
   c) mergers: methods, skills, projects
   d) career development
      i) mobility
      ii) define core knowledge requirement
   e) availability
4) Form use
   a) how to use
   b) when to use
   c) caveats
   d) auto-fill
      i) really want the information on the form, not the form
   e) Data calls
      i) What data is needed
      ii) Where is the data
      iii) What actions are required

For each of these business areas, it was noted that the information is dynamic and constantly changing. Thus, any KM systems or processes developed must allow easy and low cost ways to update and correlate new information. Users need precise information access according to type, topic, time, and quantity. In addition, there are multiple levels of knowledge that independently can be used by many people, but together may create a security violation. This is similar to the security issues in information fusion and raises the issue of how to deal with multi-level knowledge security.

These business areas revolve around the core competencies of SSC-CHS, which were described as:

- Systems Engineering
- SW/HW design & development

- ♦ Operations & Maintenance
- ♦ Systems Integration
- ♦ Installations

3.2.3. Current KM Related Initiatives

The SSC-CHS participants were asked to quickly list current projects and issues at SSC-CHS that are related to KM, whether by business processes or by technology. The following list describes these answers.

- ECITECH-D is a web based system hosted on a server in Norfolk VA
  - skills DB
  - current projects
  - marketing
  - resumes
  - facilities data
  - prospective business areas
  - department briefings and presentations
- Code 70 SiteServer
  - SQL server with a Web front-end
  - departmental information
  - personnel database
  - department briefings and presentations
- Code 60 Intracom
  - Central portal for all Code 60 employees
  - Centralized news and locale oriented data
  - Code/Project/Branch wide news. User personalized.
  - Locale specific data sources
  - Personalization is integral to interface
  - Employee directory and Knowledge repository
  - Context, content, and semantic sensitive search engine for employees (Ask Jeeves contextual search engine)
- Maximo
  - Computerized Maintenance and Asset Management System, developed by PSDi
  - Track all project assets in our storerooms, operation locations (labs), integration areas, as well as our ships, sites and other external sites that we ship hardware.
  - Utilize a bar code reader/scanner to automate the receiving, moving and shipping process.
- Distance Learning
  - An initiative in collaboration with Old Dominion University and the Navy School House to provide sailors with an associate degree and an IT education.
- Code 63 JDMS (Joint Data Management Server)
  - Internet based data server

    - Sophisticated search utilities
    - Message conferencing
    - Integration of related data between otherwise separate documents or data sets
    - Engineering information/services
    - Configurations Baseline database
    - Online collaboration
- IT-21 Shipboard CM Website
    - Fleet NCR processing
    - Preferred products list (PPL)
    - Qualified parts list (QPL)
    - System/Subsystem Interface list (SSIL)
    - Virtual Workspaces (VWS)
- INFORM system tracks:
    - Personnel, security, skills, education, passport, minor property, time keeping, training, OGE450, POCs and medical history, travel, etc
    - ACCESS DB to be moved to a Oracle backend
- CorpWeb
    - Intranet web site
    - Each dept has own setup
    - NCR has Sitescape for marketing data
- Collaboration tools
    - Netmeeting
    - Whiteboard
    - Video over IP
    - Groupsystems

3.3. Future Plans

This workshop was only the first working session for the DON CIO – SSC-CHS joint KM project. This project will continue in the coming months on a schedule that still must be defined, but which fits within SSC-CHS's needs. One area that can be addressed immediately is the need to increase the awareness of KM and its benefits throughout the SSC-CHS organization.

3.4. Recommendations

This workshop accomplished its objectives and created a good foundation for the successful implementation of the KCO model at SSC-CHS. The project should take the next steps outlined in the workshop soon to avoid losing the attention of the teams' members to other work projects.

The ideas generated and the issues raised in this workshop must be elucidated further to develop a detailed implementation strategy and plan. The key tasks to be performed next are listed below. These can be accomplished through a combination of collaboration between the DON CIO and SSC-CHS teams at their own sites, and another DON CIO visit to Charleston.

1. Create detailed inventory of existing KM related projects at SSC-CHS
2. Create detailed inventory of existing IT tools at SSC-CHS and availability for KM project
3. Choose initial project and elaborate business need in a one day workshop
4. Define metrics for continual assessment of KM project effectiveness
5. Map metrics to KCO model stages
6. Identify user group for pre-project and post-project surveys
7. Identify lead SSC-CHS and DON CIO project managers

4. Workshop 2: Knowledge Management Project Selection Workshop

The workshop was held on 19-20 September 2000 at SSC-Charleston in North Charleston, SC.

4.1. Objectives

Workshop 2 concentrated on completing the task to choose the pilot project and to elucidate the business needs. The other tasks listed at the end of Workshop 1 are either ongoing or will be addressed in the future workshops and meetings. In particular, this workshop focused on the following objectives.

1. Identify specific issues and characteristics of each potential pilot project
2. Determine the suitability of potential pilot projects
3. Prioritize pilot project candidates
4. Choose pilot project
5. Identify key characteristics for success of pilot project
6. Continue identifying and assessing existing KM projects and IT tools that can be used for the pilot project

4.2. Results

The workshop began with a brief review of the previous workshop's results, and the goals of this joint project. Also, the objectives and activities of this workshop were aligned with the KCO model. This project is currently at Oparea 3, Opscenter Alpha which has the following six Keysteps:

1. Identify the core strategic process- The purpose of this step is to identify your Command's core strategic process. A core strategic process is the primary process that the command follows to accomplish its mission. The goal in assessing your Command's core strategic process is to list the steps in that process and develop a "map" that shows how this process touches and involves different parts of your organization. Understanding the core strategic process will help focus on the knowledge, skills and information needed to support that process
2. Identify critical actions - In the previous step you mapped the core strategic process. Now you will determine to what extent each of the tasks in that process is critical to mission success. A Critical Action (CA) is an action essential to mission accomplishment. In the deployment cycle, for example, the final training certification is essential to deploying successfully. Identifying CAs is important because it is necessary to understand when and where people need to make key decisions and act upon them. Recognizing the knowledge, skills and information that people need in order to complete CAs is also a crucial factor in building a KCO.
3. Identify critical action personnel - Now that you've identified a core strategic process, "mapped" it, and prioritized the critical tasks involved, your next step is to identify the key

people who either make the decisions or physically perform the CAs. This will help identify requisite the knowledge, skills and information requirements for these CAs. The goal is to produce a list by job title of key personnel (which may include more than one person per task).

4. Identify knowledge, skills, and information requirements - The goal in this section is to identify knowledge, skills and information requirements as necessary to perform the Critical Action Tasks. By identifying the key knowledge and information requirements, you can design and deploy a system to deliver relevant information which enables skills and knowledge transfer to take place. To develop these requirements you will talk with the people identified in the previous step. Organizing virtually around these requirements will mark the beginning of a true Knowledge-Centric Organization.
5. Aggregate knowledge needs into content centers - The goal of this step is to gain an understanding of what content centers are and to collect knowledge and skill requirements into common content centers. Groups of people in an organization with common needs are called organizational content communities. From these shared needs, one can aggregate knowledge and skill requirements into useful content centers accessible to the community. Ultimately, KCOs will link organizational content communities together to form a larger Community of Practice constellation. To reach this point however, knowledge and skill requirements need to be aggregated into useful content centers accessible to the organization.
6. Design a communications strategy - The goal of this step is to manage the implementation of a Knowledge-Centric Organization by developing and implementing a communications strategy. A communications strategy entails building awareness of implementation goals, updating progress, and encouraging collective ownership of the implementation process and outcomes. Communications must be both vertical and horizontal. A good communications strategy utilizes formal and informal channels. Inter-functional communications are essential to performance at all levels--strategic, operational, and tactical, and across all areas. A properly constructed communications strategy allows for the quickest, most efficient and dependable transfer of information.

This workshop is working on Keystep 4 with an emphasis on working with a focus group to identify, assess, prioritize, and choose the knowledge, skills and information requirements for the pilot project. The focus group was asked to concentrate on exactly how people do their jobs and explore what they have or need in order to do so. Also, this information was not limited to hard data for decisions or actions, but included the experience and expertise that people frequently rely on during decision making.

4.2.1. Selecting Pilot Project Topic

The first working session used the pilot project candidate topics generated in workshop 1 to further elucidate their specific issues and characteristics. As in workshop 1, the differences between an information system and a KM system were described at the beginning of this session to ensure that all participants understood this critical distinction. The goal of a KM project is not to merely develop information repositories and databases, but to find methods and processes that allow an organization's members to easily and quickly find and access contextually relevant,

focused pieces of information rather than a large amount of potentially relevant information. Knowledge-Centric Organizations connect people and deliver them the right information at the right time for decision and action. They also learn constantly, innovate continuously, make quality decisions faster, reduce product and service cycle times, and accomplish their missions more productively.

The central themes of a good KM project were reiterated, namely:

- High business impact (easy to see success)
- Strong advocacy within leadership
- Project results and lessons will be useful for other KM projects
- Feasible

Table 5 Voting results for pilot project candidates. Parentheses indicate results for first vote when two votes were taken. Total votes are not always equal because of abstentions. Averages are calculated with high=3, medium=2, and low=1.

Topic	High	Medium	Low	Average
Business development	11 (13)	3 (1)	0 (0)	2.8 (2.9)
Project management	6 (7)	9 (6)	0 (0)	2.4 (2.5)
Personnel	1	13	0	2.1
Forms	0	0	16	1
Data calls	0	0	16	1
Installed system field support	3	12	1	2.1

Business Development was chosen as the topic for the pilot project. Prior to the vote, the participants discussed the importance of choosing a high-impact project. A high-impact project was defined as: providing a substantial and measurable improvement to the organization; being appreciated as a success by executives who are not involved in the pilot project; worthy of significant effort by many members of the project team in addition to their regular duties. Using these criteria, the Forms topic was not considered as high-impact, and the Data Call topic was not considered feasible because the required information was unknown, variable, and not controlled by SSC-CHS.

4.2.2. Pilot Project: Business Development

The project team discussed and identified the specific aspects of business development that SSC-CHS needs to make more efficient and productive. These are:

1) Awareness of opportunities – currently get information on new opportunities from:
   a) direct customer interactions, especially from current customers

   b) referrals from current customers, other SSCs (little), and partners(govt and industry at 1:4 ratio). Industry acts as both a contractor and a team member, e.g. company will ask SSC to test product and use data for further development which SSC can market to their customers
   c) published: CBD, engineering trade magazines, professional societies
   d) business intelligence: e.g. funding, timing
2) Internal awareness and knowledge of expertise and specific projects
3) Strategic planning
   a) technology roadmaps and forecasts
   b) core competencies
   c) business plan
   d) new markets (non-DoD)
4) Competitive business intelligence
   a) other DoD and government labs
   b) market trends
   c) awareness and knowledge of competitor's expertise, needs, and weaknesses
   d) how to turn competitors into partners

4.2.3. Characteristics of Pilot Project Success

A critical component of a successful KM project is a clear and common understanding of what success entails. The group was careful to avoid describing success as a new IT tool, but recognized that some metric of business improvement has to be used. The following issues were determined to be important:

1) Grow business: funding, number of projects, new customers, non-DoD customers
2) Method to identify and recognize customers
3) Increase teaming: inside SPAWAR and SSC-CHS
4) Distribute important information found during normal business - fast and easy and to whom?
5) Have a Chief integrator like there is a chief engineer
6) How to measure the win – what metrics should be used ??
7) Market intelligence
8) Expertise yellow pages
   a) Technical - customer needs capability, we don't have it, does anyone in our organization?
   b) Customer knowledge - who knows something about this new customer?

4.2.4. Break-out Sessions

Two subgroups were formed for concurrent special sessions on technology and cultural awareness. The technology session focused on analyzing the types of information needed for the Business Development topic, and if this information already existed within a SPAWAR IT system.

This session spent a lot of time discussing how and why a database or information repository would not satisfy the success factors. For example, there are several IT projects underway in various SSC-CHS codes to consolidate data on employee skills, projects, and business opportunities. However, these actually contain too much detailed data to allow someone to quickly determine the salient information they want and to contextually connect it with information from other sources. Indeed, the group decided that the Business Development KM need is for succinct summarized information.

Another impediment was discussed concerning the ability and desire for a SSC-CHS Code to share all their employee and project details with another Code, or even less likely, with another Systems Center. This raised an important issue for achieving success in this pilot project, namely, people will not share everything they know so we must construct a set of processes and tools that don't require sensitive information. For example, one solution was developed to get specific project and expertise from each Code based on asking managers to provide short one or two paragraph descriptions of their division's projects and personnel capabilities. These descriptions must be honest and directly address specific project tasks instead of broad generalizations.

Consequently, the group agreed that this pilot project doesn't need the full capabilities of the large IT projects, but needs simple and rapid ways to convey succinct information to interested parties. A major conclusion was that the pilot project should not and does not need to wait for the larger IT projects to complete, and that it can most likely use existing IT tools with only minor changes. Several ideas to do so were proposed:

- Start with manually collected summaries from division managers and post these on a simple web site
- Include snippets of customer information from people visiting or conversing with customers
- Possibly make the web site a Community of Practice so related threaded conversations and stored documents can be available with a contextually sensitive link
- Incorporate as much automatically pulled relevant data from the IT initiative databases as possible with only a small effort
- Use restricted sets of colleagues to define Instant Messaging groups to allow trusted real-time communications among project teams and associates, especially for field office people with Charleston personnel

The Culture and Awareness session focused on how to insert KM practices into SSC-CHS's business processes, and to make people aware that this pilot project is in progress in order to improve their work lives. In particular, the session discussed the specifics of starting a Community of Practice and ensuring that it is dynamic and engaging. The key results of this breakout group are listed below.

- Issues
    - Focus core competencies for one organization

    - Need a business plan and strategic plan
    - Act as a corporation
- Expanding business areas
    - Customer intelligence
    - Partner intelligence
- Business Development process
    - Process steps
    - SSC-CHS needs Better working relationships, More trust, Better communications and awareness
    - No formal process in place
- Who are the critical people
    - Everybody
    - Business integrators
    - Command integrator – is there one?
    - Chief Engineer in each department
    - Professional and project engineers
    - Team leaders and branch heads
- Critical knowledge
    - Partner intelligence: within SSC-CHS and external
    - External business intelligence
    - Customer intelligence
    - Internal business intelligence
    - Funding
    - Core competencies (related to funding and other information)
    - Availability and schedules
    - Current project repository by DC office
    - Skills database by Code 40 DC office
    - Call center links systems experts and systems database
    - Information and privacy information could be integrated from Code 50

4.3. Future Plans

The next workshop will be held on 3-4 October 2000 at SSC-CHS. The objectives for this next workshop (#3) are:

1. Specify knowledge assets required for pilot project
2. Identify location and holders of existing knowledge assets
3. Identify assets that need to be created
4. Specify which assets can benefit from IT and which should be manually handled
5. Define nature of Community of Practice for pilot project, and the mechanics of starting it and maintaining its growth and vitality
6. Incorporate existing business development initiatives into pilot project as much as is possible

7. Determine surveys and populations to monitor progress in KCO implementation
8. Identify best methods to create awareness and appreciation for the pilot project throughout SSC-CHS and greater SPAWAR

4.4. Recommendations

The pilot project topic has been chosen and we are starting to define the specific critical knowledge assets, action personnel, and IT tools needed to implement the KCO. However, this pilot project should be aligned with other KM initiatives at SSC-CHS and with the corporate KM projects guided by SPAWAR HQ.

This alignment can best be accomplished by having three parallel efforts by the joint SSC-CHS and DON CIO team. These are:

1. Pilot project: Focus on specific well defined business application area. Map knowledge assets to business processes and implement aspects of KCO model to link them to provide succinct contextually connected information in a rapid and focused manner.
2. Culture and Awareness: Disseminate awareness of the benefits of KM and the KCO model throughout SSC-CHS. Also, monitor progress of understanding of KM and the performance of pilot initiatives using surveys, focus groups and interviews.
3. Enterprise KM: Work on a coordinated KM strategy and align initiatives in SSC-CHS with those throughout SPAWAR, particularly corporate SPAWAR's KM programs. Develop methods and standards for Communities of Practice, and link to SPAWAR's core business thrust in Horizontal Integration.

5. Workshop 3: Knowledge Asset and Content Center Workshop

The workshop was held on 3-4 October 2000 at SSC-Charleston in North Charleston, SC.

5.1. Objectives

This workshop concentrated on identifying the critical knowledge, information and skills required for the Business Development pilot project. These knowledge assets will form the main body of Content Centers created to facilitate knowledge sharing among the project team and throughout SSC-CHS and SPAWAR. In particular, this workshop focused on the following objectives.

1. Specify knowledge assets required for pilot project
2. Identify location and holders of existing knowledge assets
3. Identify assets that need to be created
4. Specify which assets can benefit from IT and which should be manually handled
5. Define nature of Community of Practice for pilot project, and the mechanics of starting it and maintaining its growth and vitality
6. Incorporate existing business development initiatives into pilot project as much as is possible
7. Determine surveys and populations to monitor progress in KCO implementation
8. Identify best methods to create awareness and appreciation for the pilot project throughout SSC-CHS and greater SPAWAR

5.2. Knowledge Assets for Business Development

This portion of the workshop tackled the difficult task of distilling all the disparate information needs for business development into a short list of very high impact knowledge assets. The first activity defined knowledge assets, and differentiated them from merely important but uncritical information. Knowledge assets are distinguished by:

- Context -What was going on when the learning occurred?
- Distilled Learning - Guidelines, Questions, Checklists, Better Practices
- Performance Histories - Local stories & insights, i.e. what really happened and why
- People - Who to talk to when you really want to learn & apply
- Artifacts - Stuff you can reuse in electronic form

Indeed, it is essential to understand that KM is not about simply increasing people's access to information. On the contrary, access to large amounts of information is good when there is ample time to peruse it, but this access does not provide quick answers. KM seeks to provide these answers as rapidly and accurately as possible, either through stored pertinent information or links

to other people who are likely to know the answer. This is the essence of the following quotation from a KM user in British Petroleum[2].

> "Wish all the stuff we read was so well put. I lived this process together with the folks that were quoted in the text. Not only did you capture the content, but also the souls of these people talking."

This concept was reinforced with a discussion of the Army's After Action Review method, which rapidly and simply captures the tacit knowledge gained by individuals while doing a task. The After Action Review poses four simple questions:

1. What was supposed to happen?
2. What actually happened?
3. Why is there a difference?
4. What can we learn from this?

Similarly, project teams can be debriefed at the end of the project to understand the key issues that led to success or failure.

1. What was the objective of the project?
2. What did we achieve?
3. What were the successes? Why? How can we repeat the success?
4. What were the disappointments? Why? How can we avoid them in future?

As a reminder of the special nature of knowledge assets and the goal of KM, the following graphic was used throughout the workshop.

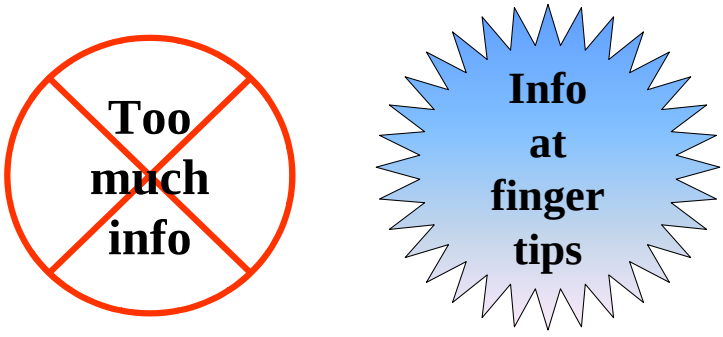

Figure 13 KM does not seek to merely provide greater access to information, but to provide pertinent and actionable information right at a person's finger tips.

[2] From Kent Greenes on the success of KM at British Petroleum. Personal communication.

5.2.1. Prioritizing Knowledge Assets

The potential knowledge assets identified for SSC-CHS's business development efforts are:

1) Project and Expertise Information
   a) Organized by Command, Department, Division, and Branch levels
   b) Descriptions do exist but they are not descriptive enough and are not connected across Codes, functionality, and location
   c) Need Point of Contacts (POCs)
2) Services SSC-CHS offers
   a) Organized by competencies and functional areas
   b) An example was given of a cold call on a customer by Citech-D who needed answers immediately on special qualifications and existing projects to respond to the customer's needs and portray SSC-CHS as ready to perform the project. This information was not available during the customer meeting.
   c) Need a brochure of 4-5 pages describing who SSC-CHS is and the major contracts available
   d) Need product sheets (e.g. mobile computing), and CDROM samples,
   e) Need resumes (no names) of key people
   f) Need listing and description of major facilities, such as test beds
3) Business integrator knowledge and initiatives
   a) Should take advantage of their knowledge and their work on business development
   b) Create a virtual hot line to them
   c) Set up a Community of Practice for them that others can look at in a read-only mode
4) Lessons Learned
   a) For example, if there is a No bid decision on a RFP, why was this decision made and by whom? At a later date, have the criteria changed? Check with POC before wasting Bid & Proposal funds on a poor opportunity.
   b) Which customers Don't have funds
   c) Assist with generating valid cost estimates for proposals
   d) What are the key customer characteristics: cultural - DoD services, foreign
5) Funds trace, i.e. who has money to spend and on what?
   a) How do we address these?
   b) How do we get this?
   c) Insights early in POM
6) SSC-CHS Strategic Plan
7) Industry Business Intelligence
   a) where is the industry going
   b) who is doing it
8) Marketing checklist, ROI, resources

The proposed knowledge assets were further discussed, refined, and prioritized using Groupsystems software. This allowed the workshop participants could consider their preferences and enter comments associated with each choice. A scale of 1(low) to 10(high) was used to assign a level of importance to each knowledge asset. Forced ranking was not used. Therefore,

several knowledge assets could receive the same value from each voter. Figure 14 shows the results of this vote.

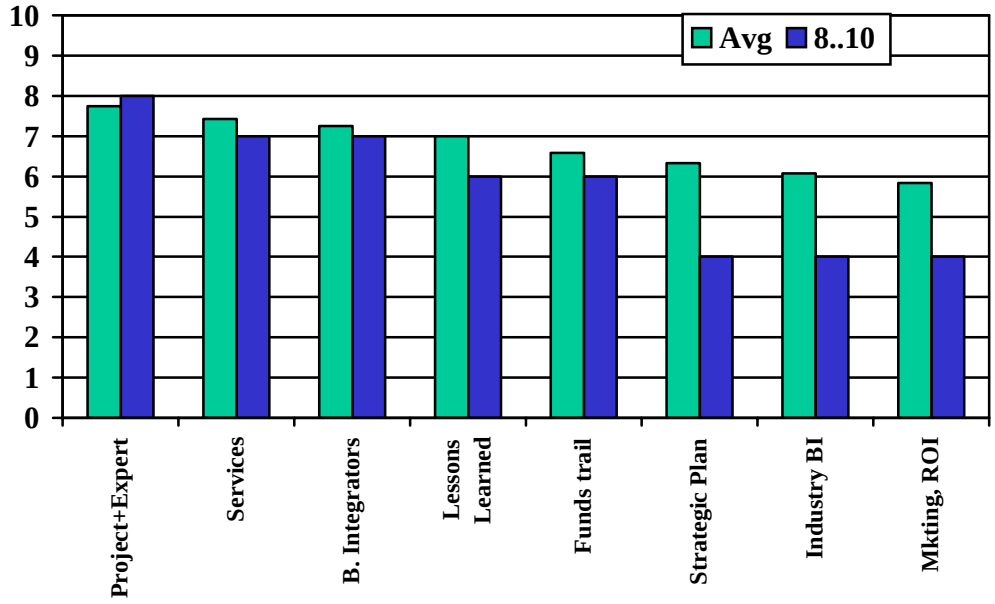

Figure 14 Prioritization results of knowledge assets important to business development. The average vote value is shown in green, while the number of high importance votes (8, 9, or 10) are shown in blue.

The top ranked knowledge asset is SSC-CHS project and expertise information. The comments associated with this asset are listed below.

- Who (Department, Division, Branch) is working on what project?
- Identify expertise to the division level. Allow division head to manage their assets.
- Historically, what projects/programs have we worked on?
- Need narratives describing project, functions performed, volume of revenue, years of involvement
- skills and expertise, functions performed
- Corporate past performance, a resume of sorts that captures our successes, time to implement/dollar threshold/ metrics of work performed so mgt can compare what we do and how. This would help obtain best practices internally and incorporate folks good ideas. If the metrics are short and sweet and easy to capture it would be better for the field. This would also help codes that are less mature in various areas.
- System equipment experience

- Business integrators can play a more active part in the codes, helping us gather info, they could have a smaller list (database) of resources available and POCs for each so we can reach back if we need info quickly.
- We needed to know who might have the expertise to team with us to install a video monitoring system for Army Day Care centers for (1) marketing (been there/done that), (2) standardizing the configuration, (3) standardizing the Army configuration across the world (multiple project came to SPAWAR for similar work), (4) defining the state of the art technology to be used, (5) minimizing the travel costs for installation, (5) maximizing the number of systems installed for the amount of money available, (6) optimizing the contracting for the systems, ...
- department, division or branch descriptors with POCs for each major area of expertise
- Chief engineers should be sources of new technology information.

5.2.2. Building Content Center

The top four ranked assets were discussed in more detail to determine exactly what context and related information is required for them to become effective answers in a real scenario, and where this information resides. These results are required to consolidate knowledge assets into content centers, and are listed below.

1) Project and Expertise
   a) Need pithy information
   b) Need POC's
   c) capabilities briefing exist but they are not always objective
   d) oral tradition is usually the source of realistic information on other branch capabilities and projects
   e) there are lots of briefings available but few that consolidate the desired information to avoid having to look through a lot of extraneous information
   f) many projects have web sites that are good sources of detailed information
   g) the Y2K identification and review of systems and responsible parties produced a thorough listing of IT systems
   h) Need soft information from people interviews as much as formal documentation
2) Services offered
   a) Use incentives to get project managers to continually provide information, such as making it part of their performance objective
   b) Statements of Work
   c) task statements
   d) customer’s project information
   e) command web site
   f) program web sites
3) Lessons Learned

a) Code 60 is making it part of their new business development process, including closure assessments (retrospectives)
b) What level of the organization has the most beneficial lessons to share? Certainly, proposal capture managers and program managers, plus others
c) Want to know why no bid decisions are made
d) Deconstruct failures. For example, senior executives wasted time marketing Australian Military without knowing that Australian laws prohibit using SSC-CHS in a large capacity

4) Business Integrators
   a) There are five
   b) Know how to market specific customers
   c) Can provide lessons learned
   d) Can be POC's for strategic business unit
   e) Can sanitize cost estimates (backlog, capacity, contracts)
   f) Might act as a home page for Code
   g) Center L.T.
   h) They initiative interests

5.3. Culture and Awareness: Training and Communities of Practice

A major component of successful KM implementations is a concerted initiative to raise the awareness of everyone on the organization on the characteristics and benefits of a KCO. This will necessarily start with the pilot project team and expand outward. The group discussed what the best grouping was to do awareness training, and who are the people who can benefit the most from the training. The consensus was that it should be at the division level for most, but that each division needs to be individually considered and some may require working at the branch level (Each division has multiple branches). The training brief should include KM concepts (at the user level), Pilot KM program information, a tailored "What's in it for me?" (WIIFM) for the specific group, and pointers to what they can do with this information within their own work environment. These efforts can be widely described in SPAWAR newsletters and online forums. An important issue concerned the slow changing of an organization's culture, which means that core value will change slowly and strategically. Also, strategic goals should reflect the effort required to achieve them.

In addition, a brief description of Communities of Practice was given with examples from Xerox and the World Bank. Although this is part of Oparea 6 Building Communities, it is an important component of the KCO implementation plan and can be DONe in conjunction with the activities in Oparea 3 to define and develop a knowledge asset center. Communities of Practice are (KCO model CDROM):

> "Collaboration, innovation, and knowledge-sharing are at the core of Communities of Practice. CoPs are driven by a common purpose and managed by a set of processes for sharing knowledge.

CoPs represent a web of individuals connected together through a common language and set of goals. They can take many different forms, providing a base for individuals to collectively build things, solve problems, learn and create new knowledge. Members of CoPs share tacit experience through interaction and dialogue, building relationships, creating meaning, persuading and influencing."

In particular, a Community of Practice has the following key characteristics:

- A group of people bound by a common purpose or common goal
- A group of professionals that is informally bound to one another through a common class of practices and in pursuit of greater knowledge and understanding
- A naturally-occurring common interest group of practitioners--not formed by a directive or organizational chart - that formalizes its exchange process
- A strategically formed group working together to focus on an issue.
- A network of people built on a set of relationships and creating an intellectual atmosphere that fosters innovation.
- A compliment to formal organizing structures designed to enhance performance.

5.4.Future Plans

5.4.1. Task Force Assignments

This project has reached the point where knowledge collection, distillation, and web system development can start. Consequently, the pilot project team assigned representatives from each code to act as task leaders.

5.4.2. Next Workshop

The next workshop (#4) will be held on 17-18 October 2000 at SSC-CHS. The objectives for this next workshop are:

1) Map knowledge assets and content centers to various realistic user scenarios
2) Identify, assess, and prioritize metrics for pilot project outcomes and outputs
3) Develop initial web system design concept focusing on required functions and linkages among information sources
4) Examine and review new survey and determine populations for distribution
5) Continue developing Communities of Practice

5.5. Recommendations

This project is almost ready for the team to begin collecting, organizing, and consolidating critical knowledge assets. Thus, the team should create a set of realistic scenarios to serve as templates for how people intend to use the knowledge assets. This will allow focused tasks to be performed and monitored for effectiveness.

Also, the team should look closely at the various IT tools that are available to find existing systems that can be used or copied, either fully or partially, to rapidly develop a pilot supporting system. The critical design criteria for this system is to understand that no single IT tool (search engine, portal, etc.) can automatically retrieve or fuse information into critical knowledge assets. Consequently, people will have to decide which pieces of information are most important separately, linked, or must be directly collected from someone by an interview. A preliminary discussion of some of these functions occurred during workshop #3 with the following observations:

- Multi-frame interface can allow several important types of information to be portrayed
- Some automation can be done behind the scenes, i.e. a query in one frame can trigger a related query from a different system in another frame
- Simple summaries collected by interviews can be directly linked to POCs and more extensive information in a database

6. Workshop 4: Knowledge Asset and Metrics Workshop

The workshop was held on 17-18 October 2000 at SSC-Charleston in North Charleston, SC.

6.1. Objectives

This workshop concentrated on mapping the knowledge assets identified and prioritized in previous workshops to realistic user scenarios in order to establish the context in which they will be used. In addition, metrics were identified to monitor the effectiveness of the pilot project KM processes and tool implementations. These metrics will serve as both indicators of success or failure, as well as test data to use for continuously monitoring the relative benefit of various process and tool techniques. In particular, this workshop focused on the following objectives.

1. Map knowledge assets and content centers to various realistic user scenarios
2. Identify, assess, and prioritize metrics for pilot project outcomes and outputs
3. Develop initial web system design concept focusing on required functions and linkages among information sources
4. Examine and review new survey and determine populations for distribution
5. Continue developing Communities of Practice

6.2. Business Integrator Panel

The business integrators are key participants in SSC-CHS's business development planning and efforts. Consequently, they have insights and expertise that are important components of the required knowledge assets. The business integrators agreed to engage in a panel discussion regarding the primary issues they are working on, and the methods they are using to address these issues. The five business integrators were:

1. Will Chiaiese - Code 30
2. Will Gex - Code 40
3. Terry Simpson - Code 50
4. Ken Slaughter - Code 60
5. John Linden - Code 70

6.2.1. Primary issues

The panel discussed their primary concerns for business development within their individual codes, and for the Charleston command and corporate SPAWAR. The highlights of this discussion are listed below.

- Need to establish policy and guidance to effect business development across the several hundred people in a code (e.g. 400 people in Code 60) - this is the reason for working on Pilot project
- There is a difference between internal and external business development
- Follow through is critical - can we do a good job?
- Want to find a way to empower and guide people to go out to market, sell, and capture projects -must be aware of differences among marketing, customer relations management, etc.
- Need to align capability and capacity
- Must do this with branches and divisions - e.g. new people may not fit into current program
- Need to develop a method to train and build the skill base of employees to align with programs
- Must recognize that SSC-CHS is in a service industry. In addition to selling the ability to do the job, we must ensure that we execute the project well.

From these issues, the business integrator panel was asked to identify the top issues they are dealing with during their business development efforts. These are:

- Gathering information and making people aware throughout a department of capabilities, projects, and customers - would really like to put this information into everyone's head
- Capacity: be able to resource projects
- Training: technical and marketing
- Good business processes: best practices of business development
- Strategic and tactical planning:
- Operational (Branch heads) and current tactical
- Division Head (1-3 yr)
- Strategic (3-5 yr)
- Metrics: how to measure business development performance

6.2.2. Primary methods

Subsequently, the panel was asked to discuss what methods and tools they are using to address these issues.

- Grouped people to develop a profile of department and divisions (Code 30) - some divisions had only a small skill base; does this lead to reorganization?? New hires?
- Metrics: Code 40 is developing some
- Training: (Code 30 & 50) - marketing using a well defined business development process; new people to accept change; approx. 10% of command so far
- Consolidating information -

- Code 40 eCitechD web system.
- Off-site next month with training
- Strategic Plan for Code 40
- All info on customers, funds, projects into Access DB with weekly reports (Code 70)

6.3. Business Development Scenarios

The importance of a knowledge asset depends on the context and timing of its use. Thus, it is not enough to just identify what pieces of information can be distilled and consolidated into knowledge assets and content centers, but we must understand how and when they are likely to be used to ensure that they are organized and packaged appropriately.

This portion of the workshop developed the scenarios used during business development activities. These are:

- SSC-CHS puts on conferences for customers - Provide briefings and demonstration of SSC-CHS products; these are no longer done since the last conference had poor turnout (1 year ago)
- AFCEA, FOSE, etc conferences - Show the six most marketable technologies; Use a six section 20'X20' booth
- Gather customer intelligence from on-site team leaders
- Publish articles in trade magazines to show what you do. This leads to customers calling SSC-CHS.
- Cold calls - search out prospective customers
- Support contractors provide leads
- Gather intelligence of potential new project opportunities through word of mouth
- Leverage charter work at SSC-CHS

These activities were consolidated into the following top five scenarios, and then prioritized for their current importance to SSC-CHS business development success.

1. Word of mouth
2. Business intelligence: "eyes and ears open"; Commerce Business Daily: can't bid but gives awareness of customer interests
3. Customers call SSC-CHS
4. Repeat customers: expand work + feedback
5. Marketing training

6.3.1. Scenario Based Knowledge Asset Needs

As discussed earlier, the value of a particular knowledge asset depends on the context and the timing in which it is used. Thus, knowledge assets do not have the same value to different scenarios. This workshop exercise explored the value of the key knowledge assets identified and ranked in the last workshop to the two most important business development scenarios. These results are shown in figures 15-16.

For example, figure 16 shows that while people are engaged in word of mouth activities for business development, they are most interested in having concise and short descriptions of the services offered by the entire SSC-CHS organization. This does not diminish the importance of the other knowledge assets, but shows that the value of any information depends directly on how and when it is needed and used. The comments in figure 6 are key characteristics of the knowledge asset for ***this*** business development scenario. Thus, an example of the type of funds tracing knowledge desired during word of mouth activities is that it is a ”big project but the customer doesn’t have funds and/or they generally use other organizations and not SSC-CHS”. Similarly, the other comments relate to the importance of knowing that: the ideas being discussed are aligned with the organization’s strategic plan; the business integrators are not working on this business idea in a different way; and, there is knowledge in the organization about the customer’s particular key issues, politics, and culture in a Lessons Learned content center.

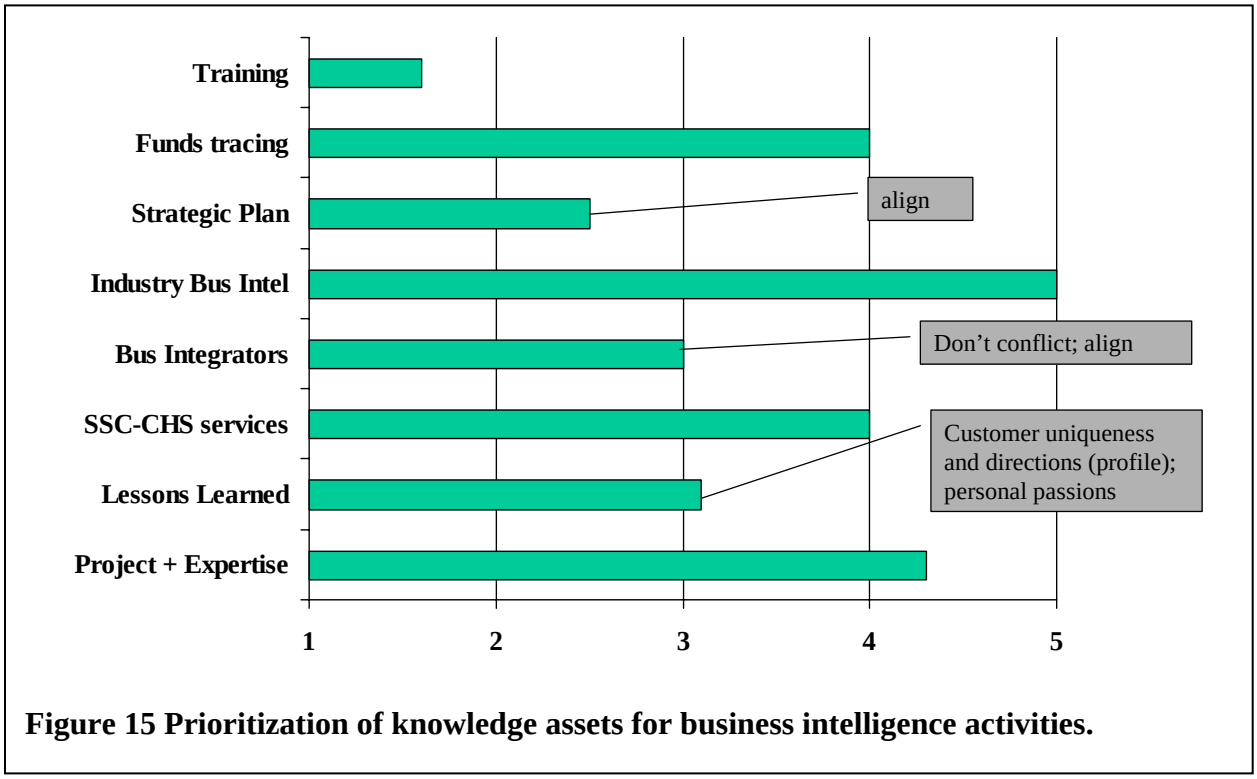

Figure 15 Prioritization of knowledge assets for business intelligence activities.

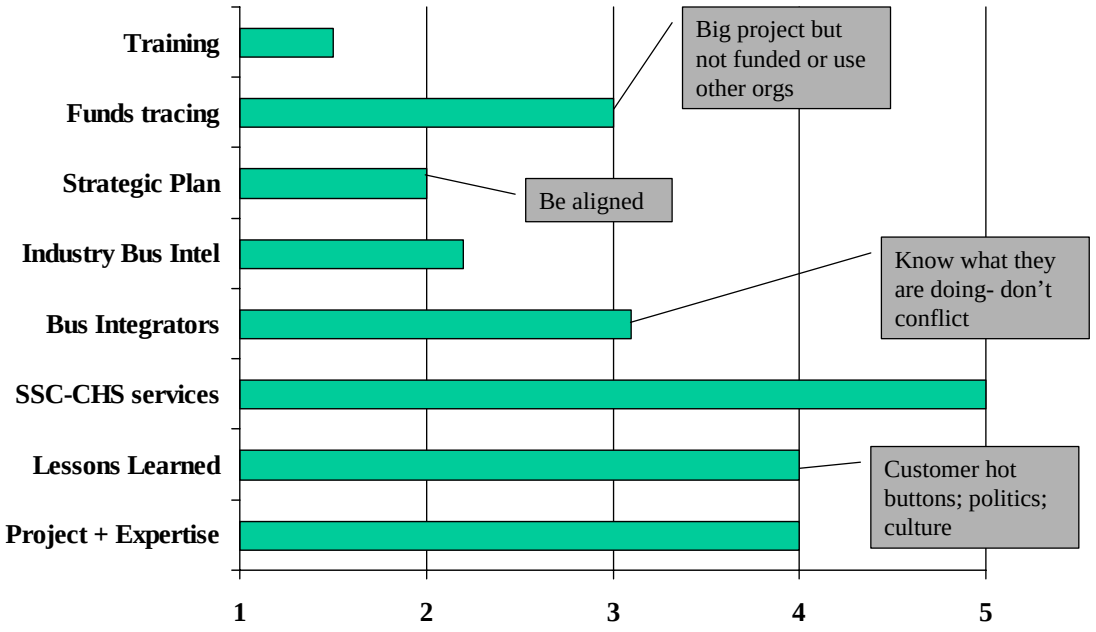

Figure 16 Prioritization of key knowledge assets during word of mouth activities for business development.

6.4. Metrics

Metrics play a pivotal role in Knowledge Management since the complexity and large variety of possible knowledge assets precludes a standard engineering requirements definition and build process. The standard systems engineering process relies on the ability to identify, assess, and prioritize all of the critically required and desired functions and features of a system. Then, trade-off analyses can be performed and the best design solution chosen. For Knowledge Management Systems (processes and tools), many of the critical requirements cannot be articulated before hand since they are so dependent on the context of use and unspoken tacit needs. Consequently, metrics provide important feedback that can be used to continuously modify and adapt the system as the user's needs become known.

The KCO model defines three types of metrics: outcome; output; and system. These differ by which level of the organization they consider and monitor. Outcome metrics concern the overall organization and measure large scale characteristics such as increased productivity or revenue for the Charleston command. Output metrics measure project level characteristics such as the

effectiveness of Lessons Learned information to capturing new business. System metrics monitor the usefulness and responsiveness of the supporting technology tools. As stated in Oparea 3, Opscenter Bravo of the KCO model:

> "Performance measures are the "vital signs" of the Knowledge-Centric Organization. Properly designed, they provide three types of indicators: Outcome (Strategic) Measures, Output (Process) Measures and System Measures. Distinguishing between the three types of measures is important.
>
> Outcome Measures gauge mission accomplishment effectiveness. For instance, a successful rescue mission might be indicated by no lives lost and return of aircraft and crew. For KCO implementation, a successful outcome might be a measurable improvement in the core strategic process, reduced cycle time and more effective decision-making.
>
> Output Measures gauge efficiency of process progress. For example, a Naval Aviator conducting an instrumented transit scans various cockpit instruments to gain a sense of position, direction, fuel consumption and elapsed time. These instrument readouts represent output measures because they provide the pilot insight to the flying process. For KCO implementation, output measures might be user participation in knowledge-sharing processes and contribution across demographics. Output measures are important because without user participation in the KCO process (output), we can not expect improved decision-making capability (outcome).
>
> System Measures gauge the operating capability of systems over time. For example, a knowledge based web-site unavailable due to technical failure of the network or server (system performance) can impact user participation (output)."

Outcome metrics were not considered at this time since the initial objective is to use the metrics to drive continuous adaptation of the Knowledge Management System. The discussion first focused on output metrics and their dependence on the particular scenario. For word of mouth activities, the following ideas for output metrics were identified:

- Contract lead tracking
  - number of leads over time
  - number of successful leads over a given time
- Business gained
  - number of customers
  - number of new customers
  - number of new hires
  - revenue
- Quantity and quality of word of mouth leads by better awareness.
- Formation of new teams across SSC-CHS, from new business
  - Indicates change to a corporate mindset

Output metrics for the top ranked knowledge assets are:

- Lessons Learned
    - Avoiding past mistakes.
    - Was it used?
    - suggestions from other Lessons Learned
    - result of Lessons Learned: alternate approach
    - new Lessons Learned; Best Practices {summation of multiple Lessons Learned}
- Services offered
    - specific customer and specific services to demo
    - real-time statements and awareness
    - fuzzy: "this helped; no good"
    - past referrals
    - surveys:
        - Customers
        - Internal people
- Project and Expertise: Same as services
- Business Intelligence:
    - Number of leads from on-site team leaders
    - revenue increase from sites
    - New business: current customers; new customers
    - Team leader thinks assets helped
    - Avoiding past mistakes: usage of Lessons Learned; surveys; changes in business
    - Revenue by product/service vs. industry
    - Our image

Proposed system metrics are:

- number of hits on web site
- taxonomy for easy navigation: how long; how hard, "give up"
- survey on usability
- Search engine precision (60%), recall, filtering effectiveness
- Currency
- Latency issues: within domain; remote connections
- "On the mark?"; answers the question - key link POC's
- Blends with desktop
- Frequency of updates: mandatory?
- Ease of populating and maintaining: intuitive; number of help desk calls; use pop-up questions
- How customizable?
- Appearance: Simple but appealing

6.4.1. Consolidated output metrics

The proposed set of output metrics were clarified and consolidated into a set of metrics that can be used during the pilot project.

1. number of successful leads
2. number of new teams (across SPAWAR) on new business versus KM usage and time in place
3. usage of Lessons Learned
4. interview statements of avoiding mistakes, developing alternate approaches, creating best practices from Lessons Learned
5. Projects and Expertise: response rapidity
6. Projects and Expertise: response pertinence
7. number of successful business intelligence qualified leads from onsite team leaders versus KM usage/time in place
8. On site team leaders say KM helped
9. number of customers & $$: won, lost, kept vs KM usage/time in place from business intelligence
10. amount of business helping others in KM

6.4.2. Consolidated system metrics

The proposed set of system metrics were clarified and consolidated into a set of metrics that can be used during the pilot project.

1. Usage of pilot project web site
2. Ease of navigating web site: length of navigation time, number of clicks to find information, difficulty [surveys, interview, pop-ups]
3. Survey on usability
4. Ease of information entry
5. Currency of information
6. Searching: precision, recall, pre-filters

6.5. Knowledge Management System Design Concepts

The knowledge assets that will be collected and organized must be housed in a manner that allows quick and easy search and retrieval by users. In today's environment, the best method to achieve this goal is to house the knowledge assets in a web based system since this can easily be accessed from a variety of devices and locations. As stated in Oparea 3, Opscenter Charlie:

> "After all the preparatory effort, the work in OpsCenter CHARLIE will actually create your KCO. Knowledge management theory and ideas become explicit and visible, and you will link users to each other, enabling personnel to get the right information to the right people at the right time to make the best decisions and achieve mission success.
>
> Your work here will leverage existing client-server computing and organizational structure. It will be important for you to have your knowledge system designers and IT support team with you as you work through OpsCenter CHARLIE. This will enable you to enhance information-sharing and collaborative efforts through an information system based on the open, dynamic, and intuitive methodology of the Internet."

However, many web based system fail to account for the very limited ability to convey complicated or voluminous information through the computer, and therefore develop systems where users cannot find their desired information. Consequently, this portion of the workshop discussed what the key features of a knowledge management system should have in order to make it effective for users to find and use the knowledge assets. Conversely, the group also considered what characteristics must be avoided to prevent the system from repeating design flaws found in other web-based systems. This task is Key Step 4 of Oparea 3, Opscenter Charlie.

> Key Step 4: Design System Specifications and Build Knowledge Base
> The purpose of this step is to develop the knowledge base system that will form the enabler and focal point of the Knowledge-Centric Organization. Look at the way in which the user will need to interface with the knowledge base system, defining contribution, review and retrieval mechanisms. You will go on to design aesthetics, system navigation and architecture. You will develop a version 0.1 prototype for usability testing, and make the required changes to this prototype as it goes through a full beta test prior to launch. Upon completion of this step you should have a fully tested beta system, ready for full-scale deployment.

The design concepts identified are:

- Need to understand context of use
  - In office: full connectivity
  - remote connection: modem based with limited connectivity
  - at customer site: can use a PDA or cell phone, possibly log-in but will be outside SSC-CHS firewall and domain
    - example: At Hanscom AFB: needed Project + Expertise information
- Layers of services
  - bandwidth
  - displays: PCs, PDA, cell phone
  - security

- Need to pre-filter information based on
    - bandwidth defined format and quantity
    - time available to get info
    - auto-complete of interrupted downloads
    - which appliance is used (PC, call phone, PDA)
- Need POC's quickly without sorting through a lot of information
    - who, how to get a hold of them
- Need to Sort – sort – sort –> get POC's
    - technical + finance + administration + manager
- Want way to know process to follow: delve into Knowledge Assets on best practices, FAQ
- Graphical clickable maps
- Instant Messenger (IM): on the road with Palm and cell:
    - shotgun to team (buddy list) to get first response
    - what if they are not there?
- Whiteboard: briefing collaboration
- Video/Audio: see who is talking
- Proactive/predictive; search/filtering

6.6. Community of Practice: Engaging the community

Another key component of the pilot project is the Community of Practice that will be hosted on the web-based system. As discussed for the system design concepts, the Community of Practice must be carefully designed and maintained to ensure that users find it useful, enjoyable, and valuable. The following description of Communities of Practice is from Oparea 6 of the KCO model.

> **What is a Community of Practice?**
>
> Collaboration, innovation, and knowledge-sharing are at the core of Communities of Practice. CoPs are driven by a common purpose and managed by a set of processes for sharing knowledge.
>
> CoPs represent a web of individuals connected together through a common language and set of goals. They can take many different forms, providing a base for individuals to collectively build things, solve problems, learn and create new knowledge. Members of CoPs share tacit experience through interaction and dialogue, building relationships, creating meaning, persuading and influencing.
>
> One may define a CoP by what it can be and what it is not. A Community of Practice can be:
>
> - A group of people bound by a common purpose or common goal
> - A group of professionals that is informally bound to one another through a common class of practices and in pursuit of greater knowledge and understanding

- A naturally-occurring common interest group of practitioners--not formed by a directive or organizational chart - that formalizes its exchange process
- A strategically formed group working together to focus on an issue.
- A network of people built on a set of relationships and creating an intellectual atmosphere that fosters innovation.
- A compliment to formal organizing structures designed to enhance performance.

A Community of Practice is not necessarily a business or functional unit, nor is it necessarily a team. CoPs do not have a management-defined deliverable or task; they are not tasked as a group to produce a specific output. CoPs are defined around knowledge, although that knowledge building can be focused on solving problems and issues, or building the knowledge foundation for a specific identified need.

Communities of Practice facilitate information-sharing and organizational learning. Those involved in a CoP can cross organizational and/or functional boundaries. For example, the "logistics community" could be considered a Community of Practice. In best practice organizations, these groups share knowledge and best practice information surrounding their common area of practice and concern. These CoPs increase networking and mutual support within an organization, thus increasing the quality of work across the organization. Linking people with common knowledge denominators is beneficial to the organization.

Community of Practice Progress Check

Common Purpose: have CoP members shared the CoP common purpose within their organizations and encouraged the buy-in of their superiors to these activities?

Knowledge Needs: has the CoP agreed on the top priority knowledge areas to tackle, given the map of knowledge resources, experience and contacts developed during the initial launch workshops?

Process: what has been decided as the process for creating, organizing, publishing, storing and sharing knowledge? Do the members who agree to write case studies, for example, have a common template to use and know how to distribute it and alert the others that this resource is available?

Roles: has the group decided who will do what in the CoP? Is anyone developing a CoP web-site? Has Enterprise leadership been briefed on the outcome of the initial start-up mobilization efforts? Is leadership clear on how they can best support the CoP?

Technology and tools: how will the group stay connected when its members are apart? Has someone taken responsibility for the discussion site and does everyone know how to use it? Is a common database of resources and examples required? Who will organize it and explain to others the process for its use?

Interaction and relationships: are there dates scheduled for the CoP to meet again to discuss progress and issues in their area? Who is taking

responsibility for convening these events? When will the next face-to-face session be?
Commitment: are members following-up on their action plans? If not, does the knowledge manager understand the reason why and have a view on how to further progress? What can leadership do to help?

The group identified the following issues for getting people involved in a Community of Practice for the pilot project.

- Branch Head C.O.P - share issues and concerns (commiserate)
- Fun, useful
    - Meaningful activities: action items
    - Interesting subjects: learn (WIIFM)
- Sure to get answers from colleagues
- Somebody responsible to get answer!
    - post and discuss "hot" issues and facilitator
    - If I get results, I would go there a lot
    - answers not just chatting

6.7. Future Plans

6.7.1. Collecting Knowledge Assets

The pilot project will now start collecting knowledge assets. Workshop 5 will be the formal beginning of this phase, although knowledge collection will continue in earnest over the course of the next several months. Initially, we will concentrate on getting the highest impact knowledge assets and making them available in the most useful format and means for users. These assets will include:

- Lessons learned from key business development personnel and highly experienced branch managers
- Insightful stories and comments relating to the scenarios
- Concise distilled information on projects and expertise suitable for rapid delivery and ingestion
- Short focused synopses of SSC-CHS wide services and capabilities

6.7.2. Knowledge Management System Design and Build

The host system will be developed in a continuous feedback mode where user responses are used to modify and adapt information presentation styles, content level of detail, dissemination mechanisms, search features, and other characteristics. This will an iterative build and test method that seeks to uncover tacit requirements and incorporate them rapidly into the system.

6.8. Recommendations

The project is part of a larger corporate SPAWAR Knowledge Management initiative and should plan on aligning the processes and tools used and specified with the corporate program. In particular, the web-based system can ultimately reside in the corporate SPAWAR Knowledge Management System which has just started as a formal project. Until this ready, SSC-CHS can use the many existing web-based tools and portals to construct a testbed system to house the knowledge assets and refine usability features.

7. Workshop 5: Knowledge Asset Collection Workshop

The workshop was held on 3 November 2000 at SSC-Charleston in North Charleston, SC. Also, the results of a teleconference on 21 Nov 00 are described.

7.1. Objectives

The workshop on 3 November 2000 concentrated on defining the topics and questions to be used for collecting knowledge assets through interviews. In particular, this workshop focused on the following objectives.

- Identify knowledge nuggets to collect
- Develop interview questions
- Design interview process
- Determine tools to use

7.2. Interviews

The first phase of collecting assets will concentrate on interviewing people for lessons learned and short statements of key insights from experienced people. This is a rapid way to get high-impact knowledge that can benefit large numbers of people, as discussed in the KCO model:

> "A combination of group interviews and one-on-one interviews are the best method for gathering comprehensive data on knowledge, skills and information (KSI) requirements."

The KCO model CDROM provides tools to help plan interviews. The Profiling Tool suggests questions to ask and the type of answers the interviewer should expect to receive.

> **PROFILING TOOL**
>
> Overview
>
> The Profiling tool provides pertinent questions to interview key personnel to identify knowledge, skills and information requirements. The tool is a basic questionnaire that takes the interviewer and interviewee through a series of questions pertaining to actions accomplished on the job and the information necessary to complete those actions. It will assist acquiring the necessary information about knowledge requirements from key personnel.
>
> How do I use the Profiling Tool?
>
> Use the Profiling Tool as a reference when conducting interviews with key personnel. For each interview, enter the information gathered into the Profiling Tool. It serves as a helpful organizational tool for gathering and displaying

important information about the knowledge, skills and information requirements of the key personnel.

Output/Example

The output will vary as the information gathered on specific individuals differs.

INTERVIEW GUIDELINES

The Interview Guidelines are a reference for conducting interviews to gather information.

Steps in Conducting Effective Interviews

Prepare for Interview:

- Determine the purpose of the interview and the associated types of information that will be collected.
- Identify the category (ies) of questions to be asked during the interview (e.g., knowledge requirements, knowledge sharing and interaction, knowledge exchange).
- Specify the areas of data necessary to meet the objectives of the interview.
- Attempt to conduct interview in their workspace in case you need to access info/data located in their office.
- You should notify them in advance of the interview of your data requirements.
- State questions utilizing the following techniques:
- Ask open-ended questions. (Ex: How can the process be improved?)
- Ensure clarify of meaning by eliminating ambiguity. (Ex: How would you rate the professionalism of your staff? Professionalism can have various meanings to different people.)
- Keep questions simple. (Ex: Rate agrees or disagree, “Our staff was both fast and friendly.”
- Watch out for biased questions, which can be difficult to detect and hinders obtaining insight. (Ex: Do you wish me to pass on any complements to the CO?)

During the Interview:

- Introduce yourself, your objective and the agenda of the interview, specifically:
- Find out if interviewees have any objectives of their own for either the KCO implementation or the interview. Their objectives are important because you can use this information to motivate or enable the implementation of the KCO in the organization.
- Ask if they have any general questions pertaining to the project.
- Explain how information will be used.
- Put the interviewee at ease about the note taking by explaining that the notes are to be used as reference of what is discussed. Try to capture their exact words, particularly if you think it may be of high importance. Ensure understanding throughout the interview and paraphrase back to them what you understood that they said.

- Utilize the Funnel Technique to move from general ideas to detail. For example: Initially broad ("Tell me about...," "Describe...") , More detail ("Who? What? When? Where? How?") , Very detailed ("Yes"/"No" to verify information)

After the Interview

- Document your finding as soon as possible and follow up on areas of uncertainty with interviewees.
- Consider sending them a summary of their comments (if relevant) to confirm what you heard and how you interpreted their statements.

7.2.1. Interview topics

The workshop group discussed topics that could be used as the focus of the initial interviews. In particular, the topics must relate to a highly important are of business development for all of SSC-CHS so that the collected knowledge assets have the most likelihood of benefiting the largest number of people. Thus, the intended types of users was considered since this affects the type of knowledge to collect and the manner in which is must be organized and disseminated.

The following ideas for topics were discussed.

- Good real-life examples of
  - Identifying a business lead
  - Capturing a business lead
  - Providing customer service
- Capturing repeat business
- Showcasing the Integrated Product Lab (IPC)
  - Especially the ability to reconfigure systems
  - Video a demo of each a product of each Code in the IPC
- Lessons learned from the best marketers at the engineer/project lead level with examples of some of their successes
- Lessons learned and key business data for starting up an operation like at Pensacola
- Lessons learned on managing customers
- Lessons learned from people doing marketing well. What are their successes and failures?
- Storyboard a successful project from start to finish
  - E.g. State Dept wireless program, CAC2S
- ROI analysis
  - E.g. Frank Mazzone's ROI analysis in his ACCESS DB system
- Key points in the new business development process being developed at CHS and corporate SPAWAR

These ideas were consolidated into a short list of topics to use for the interviews.

- Integrated Product Lab
    - What's in it
    - What is exciting about it
    - How is it useful for testing
    - How does it discriminate SSC-CHS from other government labs
    - What is unique about it
- Storyboard of a successful project from start to finish
    - Tie it to new business development process being developed in CHS and at corporate SPAWAR
- Lessons Learned: Capturing and growing business
    - How to successfully follow a lead
    - How to identify a good lead
    - How to grow an existing customer
    - How to help your customer plan, budget, and develop their program
- People to interview
    - Daily interactions vs strategic tasks
        - Business marketers
        - engineers

7.2.2. Interview questions

The draft questions will be created by the task leads from each code and be ready for review by Wed, 8 Nov 2000. The final set of questions should be completed by Fri, 10 Nov 2000.

The team members submitted proposed questions that were reviewed and prioritized by the KM team through email. The final set of questions was chosen using this ranking during a telephone conference on 21 Nov 2000. The specific questions used for each interview are chosen according to the experience and knowledge of the interviewee. Thus, each interviewee will not be asked all questions, and we must cull the list to a smaller set for each type of interviewee.

1. What lessons have you learned about how to identify a good lead for capturing and growing business?
2. How do you get leads?
3. What lessons have you learned about how to successfully follow a lead for capturing and growing business?
4. What unique approach works for you that always captures the customer's attention?
5. What lessons have you learned about how to expand work with an existing customer?
6. How do you determine which new customers to target for your product areas?
7. How do you identify who to target on cold calls?
8. How do you stay aware of the myriad products and services that SSC Charleston can provide?
9. How do you team within your organization and with others across the Command to capture business opportunities?

10. What are effective means of gathering client/customer/competition intelligence?
11. What is the Integrated Product Lab, how is it useful for testing SSC Charleston projects, and what makes it unique ?
12. What is the single most important piece of advice you can give to SSC Charleston people?
13. What rule of thumb do you use when marketing with all new customers?
14. How can we better coordinate our divisional marketing efforts?
15. What matrixes are in effect for marketing/sales management?
16. What partnership strategies can be shared throughout the organization?
17. What approaches have you used that were not successful winning a customer's business?
18. What tips have you found effective for customer cold-calls?
19. Who are the marketing/sales personnel within each division?
20. What is the corporate plan for overcoming business losses created by NMCI? Move to other DOD Services (i.e., Army, Air Force)? If so what is in place already?
21. How do you convey the "can do attitude" to customers?
22. Is the Business Integrator the primary emphasis of marketing within SPAWAR? If not what is? If so, how can we work across department business integrator boundaries?
23. Is there an official client/customer database?
24. What are the most effective methods you use to keep existing customers happy?
25. How does business development differ for small, medium, and large opportunities? How much time is needed and what people should be on the marketing team for each type?
26. What information do you need from the technical staff so that you can most effectively present the products and services offered by SSC-Charleston?
27. What is your first step in developing business? Do you have a process (flowchart/outline) in place?
28. What lessons have you learned about how to help a customer plan, budget, and develop their programs for you to capture and grow your business?
29. Who and where are the SPAWAR personnel colonizing customer organizations?
30. How does the Integrated Product Lab discriminate SSC-Charleston from other government labs?
31. As a new employee, would a marketing lessons learned file help you?
32. What is the average cost of marketing within SPAWAR by Department, Divisional? What is the ROI?
33. What customer care processes are we utilizing within SPAWAR?
34. As a new employee, what kind of tools would help you when you are in the field?
35. How do you determine and to what level of briefing material would be sufficient?
36. What are the different areas of business development, and which is your expertise in?

7.2.3. Interview subjects

Each task lead identified key people from their respective codes as potential interview subjects. These candidates were reviewed by the pilot project team to create the final list of interview subjects based on availability, expertise, and pertinence to the chosen topics, who were:

1. Terry Simpson
2. Will Gex
3. James Ward
4. John Linden
5. Capt Ron Crowell
6. Myra Rice

The set of 36 questions generated by the pilot project KM team was used as a basis for the interviews. The interviewees were given the questions ahead of time and asked to prepare responses for the questions they felt most comfortable answering. Thus, we did not expect nor want each interviewee to answer all 36 questions, but only those that covered the special expertise of the person. This is an important objective of this phase, namely, to convey the importance of capturing succinct transferable knowledge rather than complete stories. In addition, we asked the interviewees to includes topics not covered by the questions but that they felt were very important.

7.3. Future Plans: Workshop #6

The next workshop will be planned after the final interview questions and candidates are chosen. This workshop will review the initial interviews and the new survey being finalized by DON CIO. In addition, the host system design and location will be refined.

7.4. Recommendations

The project is part of a larger corporate SPAWAR Knowledge Management initiative and should plan on aligning the processes and tools used and specified with the corporate program. In particular, the web-based system can ultimately reside in the corporate SPAWAR Knowledge Management System which has just started as a formal project. Until this is ready, SSC-CHS can use the many existing web-based tools and portals to construct a testbed system to house the knowledge assets and refine usability features.

In addition, Tom Kaye of SSC-SD Code 10 is working on business development issues and is aware of the issues discussed in this pilot project. He has offered to collaborate with the SSC-CHS project and should be considered a potential key source of knowledge, and be interviewed as part of the initial knowledge collection phase.

8. Workshop 6: Creating Knowledge Assets

The sixth workshop occurred on 4-5 January 2001 and focused on reviewing the first interviews of business development experts collected on 12 Dec 00 during a working session.

8.1. Objectives

The workshop concentrated on refining collected information into knowledge assets. This transformation requires an objective analysis of whether the information is succinct, pithy, insightful, and valuable to a large number of people. In particular, this workshop focused on the following objectives.

- Review interviews and edit into succinct knowledge snippets
- Interview additional candidates
- Review and test new survey
- Identify topics for Community of Practice
- Collect project and capabilities synopses

8.2. Results

8.2.1. KCO Assessment survey

A new version of the KCO survey was developed by DON CIO. The survey was given to the workshop participants who were subsequently asked to critique it. The results are shown in figures 8-9. The participants were not told the objectives of the survey until after their criticisms were discussed. Comments include:

- The phrasing of the questions makes me feel I can't disagree
- Surveys normally ask the same question in four different ways with 100-150 questions to allow cluster and other statistical analysis
- Questions led me to say that we should be doing things we aren't doing
- I didn't know if I should answer politically or apolitically
- Training was not in the survey
- Should add a place to fill in a question
- At what point in the process is the survey given?
- This survey appears to be for a general audience of people unfamiliar with KM
- Focuses on mindset

The objectives of the survey were explained and how the critique and discussion actually was the desired outcome. That is, the survey is intended to probe the organization's KM practices and attitudes, but also to initiate discussions on key issues within the organization that must be addressed to build a KCO. In fact, a lengthy discussion occurred after the survey on the prevalence and value of knowledge sharing within SPAWAR and the need the make SSC-CHS a KCO. A major conclusion of this exercise was that the survey should not be distributed electronically, but should be given during a workgroup session where a discussion can be started afterwards and recorded. The objectives are listed below.

- Identify current state of KM methods and tools in the organization
- Assess cultural acceptance of new ideas
- Determine recognition of need for KCO
- Determine recognition of value of KCO, and impact on their jobs
- Assess level of personal support or resistance to KCO

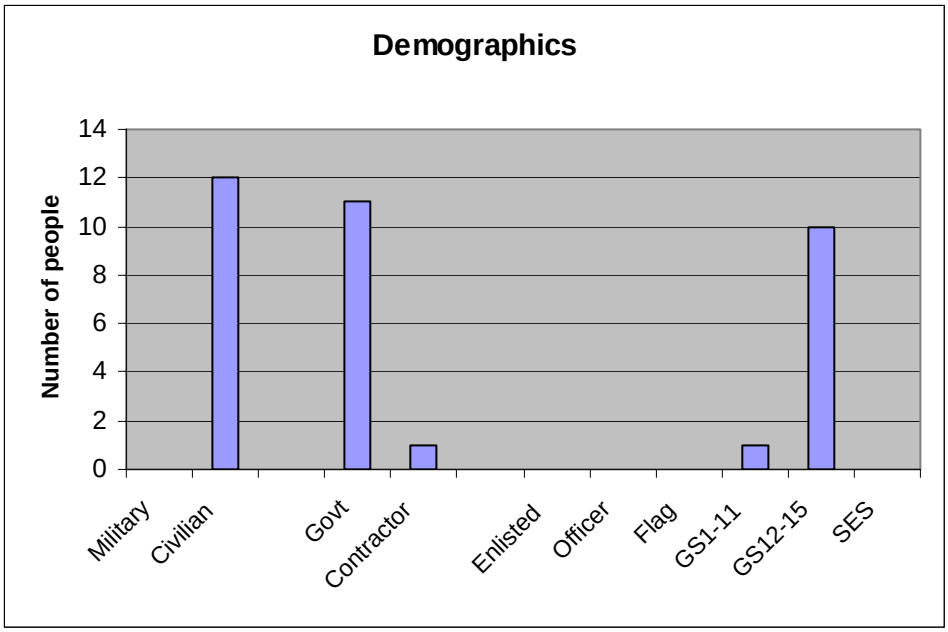

Figure 17 Distribution of people taking the KCO Assessment survey.

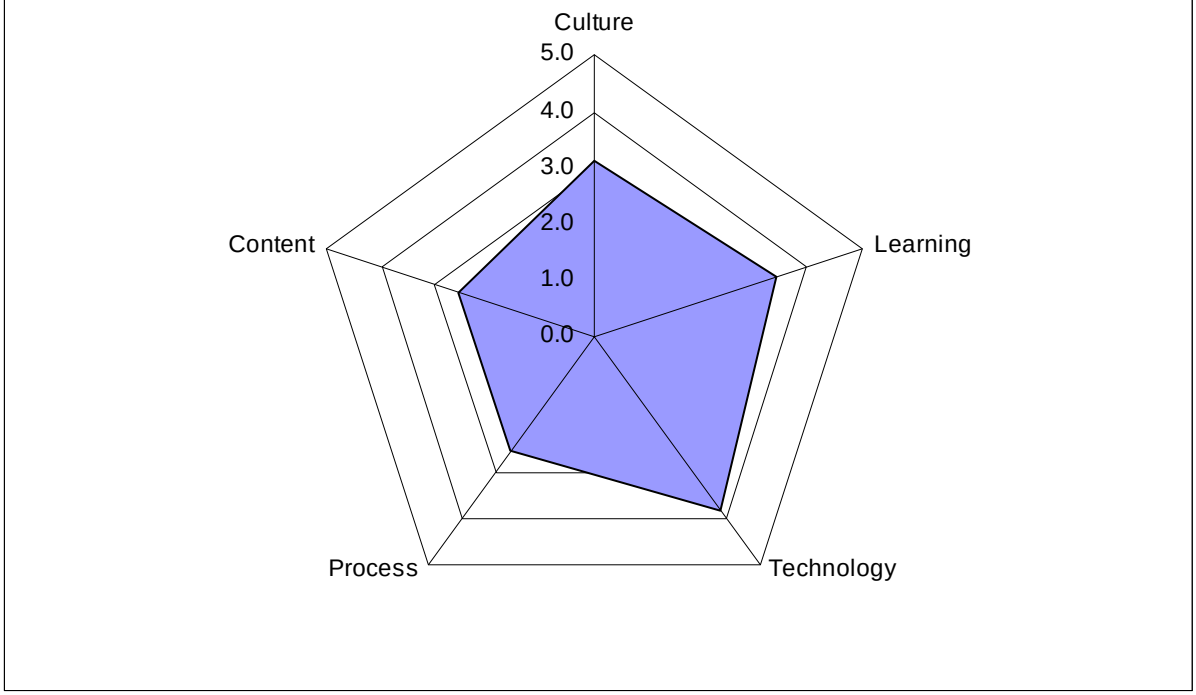

Figure 18 Consolidated averages for groups of questions relating to the current implementation status of each component of the KCO framework.

Several issues are highlighted by the results.

- KM practices
  - High scores for questions:
    - 1 - managing knowledge is a key part of my organization's strategy
    - 9 - everyone in our organization has access to the network
    - 10 – technology supports collaboration, sharing, and learning
  - Low score for question:
    - 14 – people are rewarded for sharing their knowledge
  - Radar chart
    - Technology is strong
    - Content and process are weak
- KCO benefits
  - All very high
- Personal beliefs
  - High scores for questions:
    - 1 – I am actively engaged in formal KM projects
    - 6 – I regularly share my knowledge with colleagues and learn from them
    - 13 – sharing knowledge and collaborating with colleagues enables me to perform my job better

        - 15 – I enjoy sharing and learning from others
    - Low scores for questions:
        - 7 – I regularly distill my experience and learning into written reports to share and archive
        - 8 – my organization needs better technology to build a KCO

These results show that the SSC-CHS team is knowledgeable about KM principles, methods, and implementation issues. In particular, the team understands that there aren't any simple technological solutions to building a KCO, and that significant cultural and process issues must be handled while building the KCO. This is evident from the beliefs that SSC-CHS has an effective technology base, there are substantial benefits to building a KCO, people enjoy and gain from sharing and learning with colleagues, and that there is not a reward system in place to prod people into regularly investing the effort to distill experience and information into useful knowledge for the entire organization.

8.2.2. KMAT survey

The KMAT survey is intended to gauge an organization's use of advanced KM business methods. Therefore, it can be used to measure a baseline of the organization at the beginning of the KCO implementation project, and at the end of the project to measure improvement. It is complementary to the KCO Assessment survey and both should be used during the project.

The highlights of the KMAT results are:

- High scores for questions:
    - C5 - Employees take responsibility for their own learning
    - T1 - Technology links all members of the enterprise to one another and to all relevant external publics
- Low scores for questions:
    - M2 - The organization has developed a specific set of indicators to manage knowledge
    - M3 - The organization's set of measures balances hard and soft as well as financial and non-financial indicators
    - P3 - All members of the organization are involved in looking for ideas in traditional and nontraditional places
    - P5 - "Tacit" knowledge (what employees know how to do but cannot express) is valued and transferred across the organization
- Radar chart
    - All are lower than KCO Assessment chart
    - Measurement and Process are especially low

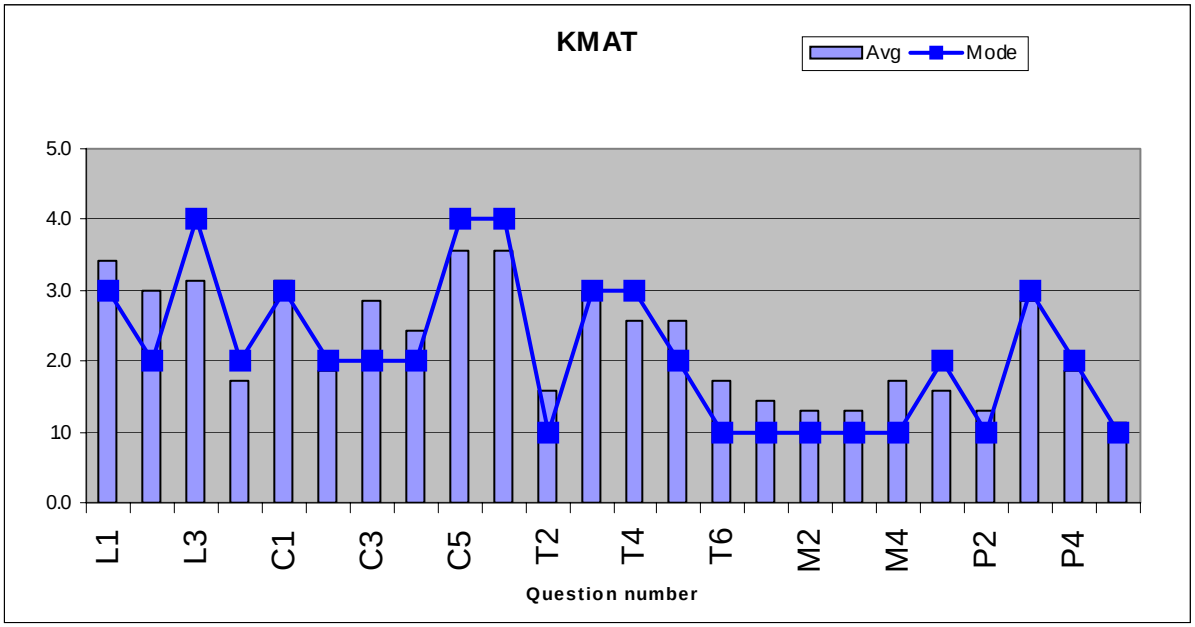

Figure 19 Results from KMAT survey.

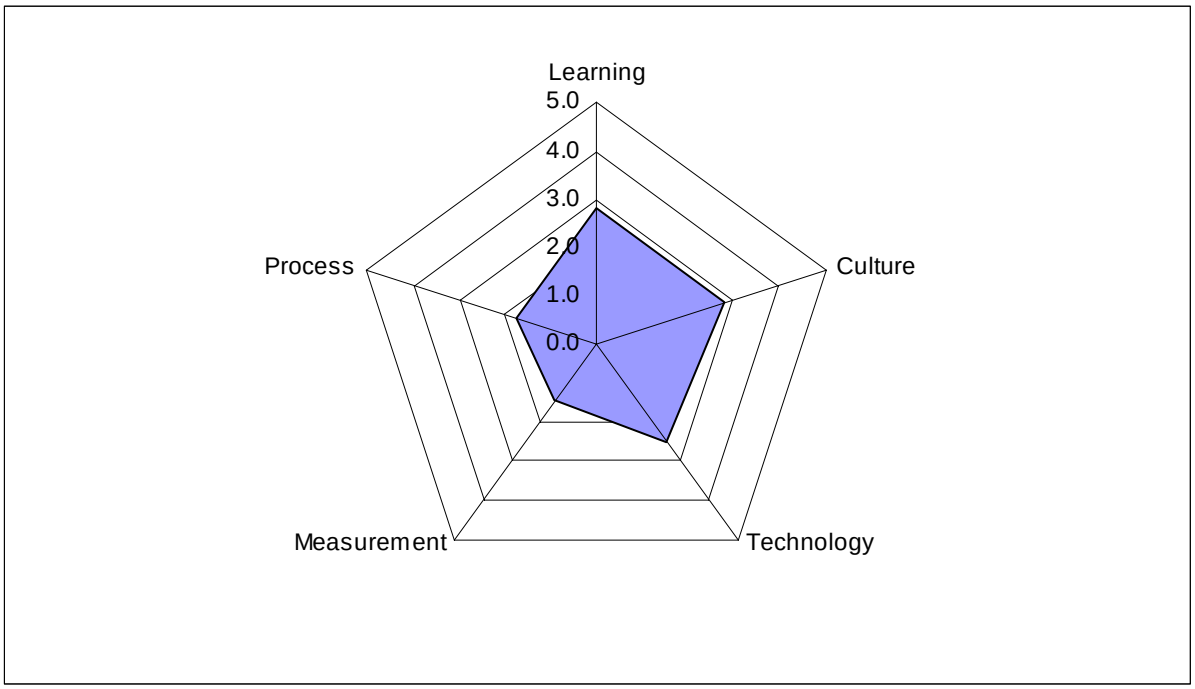

Figure 20 Radar chart of average scores of questions for KMAT components (Learning, Culture, Process, Measurement, and Leadership) showing how closely the organization is aligned with the KMAT model of a fully Knowledge Centric Organization.

These results show that SSC-CHS is still early in the process of building a KCO. In addition, the KMAT survey requires a very high level of organizational KM proficiency and support in order to score high. This will yield low scores at the beginning of a KCO implementation, but should result in steadily climbing scores as long-term KCO methods and processes are implemented and adapted to the specific needs of the organization.

The most notable difference between these results and the survey given in August 2000 at the beginning of this project is the change in attitude on the importance of managing content. The original survey shows that people did not feel that content management was not critically important, whereas in the new survey the group rated their organization's performance on content management at a medium level indicating that they need to improve this area.

8.2.3. Community of Practice topics

As part of the new web site for the pilot project, Communities of Practice will be set up to facilitate the exchange of pertinent information and inquiries among groups of people. There is a formal program to build Communities of Practice within SPAWAR and the Department of Navy. Several members of the SSC-CHS KCO Pilot Project team are also members of these Community of Practice teams.

Although the formal Community or Practice committees are addressing the larger issues of how to start and maintain these activities, the pilot project needs to implement a few Communities of Practice to support the building of the KCO. Consequently, the workshop discussed, identified, and assessed a variety of topics that could be suitable for the launch of the web site. These topics include:

- Hot topics
    - World Bank experience shows that the Communities become a source of knowledge, but that you must get experts to participate and share their knowledge
    - We need important topics that people are grappling with to get as much attention and participation as possible
- Methods
    - Use an inaugural Community of Practice day with great fanfare
    - Start each Community with an online Question and Answer chat session with a panel of experts, who can be geographically distributed
    - Have an expert from each SPAWAR command to foster corporate collaboration and test scaling of the Charleston pilot project to corporate SPAWAR
    - Capture Q&A sessions and transform into a Frequently Asked Question database that stays on the Community web site
- Horizontal Integration
    - Major topic in SPAWAR
    - Chief engineers are experts

    - Issues that can be addressed
        - Interoperability
        - Support to Battle Group
        - Goals and objectives of HI
        - Planning for installations
        - Collaborative engineering
    - HI is not a big concern for all SPAWAR locations
- Production engineering
- Rack and Stack
    - Modular construction and testing strategy
    - Might be specific to Charleston
- Contracts
- Information security
    - Viruses – how to protect workstations
    - People who have responsibility Don't have control
    - PKI
    - Can access be given to government network to off-site contractors
- Financial
- Project management – how to do it better
    - New chapter of Program Management Institute in Charleston, and there are a lot of SPAWAR members

These ideas were filtered into the following set of topics for initial Communities of Practice.

- Business development – this is the primary theme of the pilot project and should be reinforced with a Community. The panel of experts can be the Business Integrators from Charleston, Tom Kaye from SSC-SD, and delegates from SPAWRA HQ and other field sites.
    - Henry Pinner will lead
- Project Management – already have interest expressed by Charleston people
    - Need to identify leader of this Community and experts for the panel
    - Myra Rice will call some people to see if they can lead
- Engineering
    - Need to specific a topic and get a leader
    - Henry Pinner will contact people to see what topics they consider crucial, and if they can be the leader

8.2.4. Project and Capabilities synopses

The video interviews were only one type of knowledge that will be provided to the SSC-CHS community at the launch of the web site. The other major knowledge asset will be pithy synopses of projects and capabilities. These must be succinct statements with sufficient detail so that any

member of SSC-CHS can know immediately what the group actually does and can do, rather than broad marketing claims.

Some synopses were readily available and collected. The remaining synopses will be collected while a knowledge map is created of all the owners of the critical knowledge within SSC-CHS. This knowledge map will also serve as the rapid pathway guide to continually updating and improving the synopses.

8.2.5. Interview editing

The interviews collected on 12 Dec, 2000 and during this workshop were reviewed by the workgroup. The review criteria were to find comments that were especially insightful that would help many others in SPAWAR understand and perform business development better. Consequently, much interesting information may not be kept since the threshold for widely beneficial knowledge snippets is much higher than for experienced comments.

This editing does not devalue the comments and knowledge of the people interviewed. Rather, it emphasizes the significant difference between Knowledge Management and information repositories that can store a lot of relevant and interesting information. KM focuses on providing answers to people's knowledge needs in as timely and precise a manner as is possible. Indeed, the people interviewed were chosen for their extensive experience and knowledge fully aware that the KM system cannot contain all of their insights.

Various options were discussed for the final videos, including:

- organize by the interview questions so users so get answers from several people to the same question
- have question announced before the answer
- don't use complete interviews since people want specific quick answers without having to listen to the entire interview
- cut interviews in individual questions but also keep the full interview in case someone wants to watch it
- the interviews should reinforce the Communities of Practice

8.3. Teleconference 17 Jan 2001

A combined teleconference and Netmeeting was held to specify the leaders and final topics for the three Communities of Practice, and to arrange for collecting organizational synopses for all of SSC-CHS. This information will be the initial content on the Pilot Project's web site.

Final ideas for topics for each Community of Practice are:

- Business development
  - Topics must tie into corporate CBOD efforts
  - SSC-CHS pilot project
  - Tracking and management
  - Business intelligence
- Project management
  - Microsoft Project program issues
  - Using the BSA finance system
  - Migration to new ERP
  - Program Management Institute
- Horizontal integration
  - Need input from engineering people

The project and capabilities synopses collected to date were reviewed. Several examples were discussed in detail to decide if they conveyed sufficient knowledge and were succinct enough.

1. J50 : Good description but should add Points of Contact and possibly their top 5 programs to truly identify the department's focal areas.

   The Communication Systems Department (J50) provides innovative systems engineering and integration expertise for communication and information transfer systems across the frequency spectrum and around the globe. Our technical expertise is aligned to engineer, implement, and support telecommunications and switched networks, integrated networks and network management systems, tactical and expeditionary communications, satellite systems, advanced technology communication systems development, and network applications, services and operations. This department applies knowledge and expertise with service-specific, Joint, and coalition interoperable communications architectures to deliver and integrate state-of-the-art communications capabilities to the warfighter.

2. J53 : Good description but need to expand acronyms.

   The Tactical Communications Division (J53) provides support in all areas of fleet and submarine communications with a frequency range between 30 hertz and two gigahertz, including life cycle engineering for ship/submarine interior and exterior communications equipment and systems. We provide global, on and off-site, shipboard technical assistance, advanced products test and evaluation, and overall communication system signal analysis, from baseband signals to the radio frequency leaving the platform or shore station. Our four specific areas of support include acquisition engineering agent, ISEA, technical support agent, and local area support. We are also the ISEA for the ELF/FVLF/LF/HF/UHF

communication systems and an integral part of the department's integrated products team.

3. J60 : Good.

   The Command and Control Systems Department (J60) designs, develops, tests, acquires, deploys and upgrades tactical and non-tactical information systems employed by U.S. Navy, Marine Corps, and Joint Force Commanders systems which provide effective direction and control of sea, air, and land forces at all levels of the national defense organization. These state-of-the-art systems typically receive, classify, and integrate data from many sources to produce coherent graphic and statistical displays of tactical situations as they develop, in real time. This capability enhances the force commander's decision-making capabilities and his grasp of threats, risks and options. These systems are secure conduits subordinate commanders can transmit their unit's operational orders, and then transmit on-scene assessments to strategic commanders. Our focused efforts are extended to various DoD and other federal agencies for successful mission accomplishment with leading-edge technology systems and engineering practices.

4. Code 511: There is an impression that they overlap with a lot of other branches. Is this true? If so, is it something that needs to be changed or is it just part of the SPAWAR business model?

   The Tactical Switching Branch (Code 511) provides Automated Digital Network Systems (ADNS) and Integrated Network Manager (INM). ADNS connects Navy shipboard networks to other networks for receiving and transferring data of various classification levels. INM is a software suite built upon HP's Network Node Manager (NNM), that remotely monitors and manages ADNS components and interior shipboard LANs using a common web-enabled interface. It provides connectivity status, device health, and historical data for significant network devices such as servers, workstations, routers, and switches.

5. Code 514: Not a good description. It doesn't provide any insight into what they do.

   The Information Infrastructure Branch (Code 513) develops and maintains the technical expertise in base-level voice, video, data and imagery distribution systems with the migration towards full implementation of Synchronous Optical Network (SONET) and Asynchronous Transfer Mode (ATM) technologies on base-wide, large bandwidth transport systems.

The interviews collected on 12 Dec, 2000 and during this workshop were reviewed by the workgroup. The review criteria were to find comments that were especially insightful that would help many others in SPAWAR understand and perform business development better. Consequently, much interesting information may not be kept since the threshold for widely beneficial knowledge snippets is much higher than for experienced comments.

This editing does not devalue the comments and knowledge of the people interviewed. Rather, it emphasizes the significant difference between Knowledge Management and information repositories that can store a lot of relevant and interesting information. KM focuses on providing answers to people's knowledge needs in as timely and precise a manner as is possible. Indeed, the people interviewed were chosen for their extensive experience and knowledge fully aware that the KM system cannot contain all of their insights.

Various options were discussed for the final videos, including:

- Organize by the interview questions so users so get answers from several people to the same question
- Have question announced before the answer
- Don't use complete interviews since people want specific quick answers without having to listen to the entire interview
- Cut interviews in individual questions but also keep the full interview in case someone wants to watch it
- The interviews should reinforce the Communities of Practice

8.4. Working Session 23 Jan 2001: Web site content review

This visit was planned to review the organizational descriptions and edited interviews, and to decide the dates, formats, and associated issues for the KM web site. This web site was scheduled to be turned on to the SPAWAR community on 26 Jan 2001.

The following items were discussed:

- The initial content of the KM web site will be manually created HTML pages of the edited interviews and organizational synopses.
- The synopses will use reports generated from the ACCESS database with separate pages for department, division, and branch levels
- The next phase will incorporate dynamic data access from databases on the web site
- The specific databases will be a combination of existing systems in the various SSC-CHS codes, such as Inform
- The web site architecture will be designed to maximize reuse of existing SSC-CHS systems and to transition into new enterprise systems being developed by corporate SPAWAR when they are ready
- A roadmap will be created to define this time-phased architecture development plan

- Sustaining the knowledge content capture, organization, and distribution processes will require the web site architecture to explicitly include easy and fast methods for knowledge holders to input and update their information

The official roll-out of the KM site will occur in February. This will include the launch of three Communities of Practice (COP) focused on business development, project management, and horizontal integration. Each COP will have a one hour online Question and Answer session with select experts. We will ask experts from each SPAWAR location to participate to encourage corporate-wide cooperation and sharing. Special details of the COP launch are:

- Tentatively scheduled for 22 Feb 2001 at 1330 EST
- Need to advertise widely with great fanfare
- Announce at leadership meeting 24 Jan 2001 and at offsite 6-8 Feb 2001
- Need to have people ready in audience to engage in threaded discussions during slow periods
- Will use existing threaded discussion capability at SSC-CHS but can transition into corporate system in the future when it is ready

8.5. Future Plans

8.5.1. Interviews

Additional interviews will be held in the next few weeks.

8.5.2. Video editing and content management

The videos will be edited and put in digital format according to the editing decisions made during this workshop. In addition, project synopses will continue to be collected and formatted for the web site.

8.5.3. Communities of Practice Kick-off

The three Communities of Practice will be officially launched in February, 2001. In order to generate interest, each COP will have an online Question and Answer session with experts from throughout SPAWAR. These sessions will be captured, their content analyzed, and distilled to generate Frequently Asked Questions lists that will be posted on the respective COP pages.

8.5.4. Next workshop

The next workshop will be held near the launch date of the Communities of Practice, tentatively scheduled for 22 Feb 2001. This session will review and perform final testing of the web site and threaded messaging prior to its official launch.

8.5.5. Web Site Kick-off

The web site of the Pilot Project will be turned on for the entire SPAWAR corporate user community on 26 Jan 2001. The initial version will contain the videos and project synopses. In order to generate interest in the kick-off, samples of the content, mission, and purpose of the KCO web site will be posted on 19 Jan 2001.

8.5.6. Knowledge map of SSC-CHS

Since we were unable to easily collect project synopses from all codes within SSC-CHS, the workgroup decided to create a knowledge map of this information within the organization. Christy Eubanks will develop this knowledge map by visiting all codes and determining who maintains the required knowledge. She will also collect the pithy synopses from codes who did not provide them during the workshop.

8.6. Recommendations

The project is part of a larger corporate SPAWAR Knowledge Management initiative and should plan on aligning the processes and tools used and specified with the corporate program. In particular, the web-based system can ultimately reside in the corporate SPAWAR Knowledge Management System which has just started as a formal project. Until this is ready, SSC-CHS can use the many existing web-based tools and portals to construct a testbed system to house the knowledge assets and refine usability features.

Since the project has entered the knowledge dissemination and sharing phase, the metrics identified in an earlier workshop should be implemented. This will not only allow us to monitor usage and gauge preferred knowledge assets, but permit the team to adapt the knowledge collected, its organization, and distribution methods for the most effective system and processes.

The Charleston pilot project can also begin to transfer its experience and lessons learned to KM program throughout SPAWAR, and especially at SPAWAR HQ. The first step in this transfer can be to enlist experts from other SPAWAR commands to share their expertise as part of the collected knowledge, which can be shared with all of corporate SPAWAR. However, there should be a formal knowledge transfer project started with representatives from corporate SPAWAR and SSC-CHS.

9. Workshop 7: Knowledge Management Environment Design

The seventh workshop occurred on 6-7 March 2001 and focused on designing the web-based Knowledge Management Environment to house the knowledge assets collected, assess the procedures and results of the pilot project, and plan for the start of the transition of the Charleston pilot project to corporate SPAWAR.

9.1. KCO Model and Current Status

The current workshop is engaged in several Opareas which are listed below along with their relevant subareas that were specifically used in this workshop.

- Oparea 3(Building a KCO)
  - Opscenter Alpha (Envision and Strategize)
    - Key step 4 (Identify knowledge, skills, and information requirements)
    - Key step 5 (Aggregate knowledge into content centers)
  - Opscenter Charlie (Design and Deploy)
    - Key step 4(Design system specification and build knowledge base)
    - Key step 5 (Communicate rollout).
- Oparea 4 (Sustaining a KCO)
  - Opscenter Alpha (Operate and sustain)
    - Key step 1 (Scan: Develop an internal and external knowledge acquisition process)
    - Key step 2 (Dialogue: Create and sustain a dialog between the users of your knowledge management system to promote the flow of information)
    - Key step 3 (Aggregate: Construct knowledge relationships)
    - Key step 4 (Exchange: Route knowledge to users)
  - Opscenter Bravo (Measure performance)
    - Key step 2 (Assess output measures)
    - Key step 3 (Assess system measures)
    - Key step 4 (Assess incentives and rewards schemes)
    - Key step 5 (Produce community report)

9.2. KCO Implementation Team

The KCO implementation team consisted of:

- Mr. Henry Pinner, 843-218-5234, pinnerh@spawar.navy.mil
- Capt. Jim Kanter, 703-601-0047, Kantner.James@HQ.NAVY.MIL
- Dr. Geoffrey P Malafsky, 703-764-1903, gmalafsky@techi2.com

9.3. Objectives

The workshop concentrated on finalizing the design of the Knowledge Management Environment for the collected knowledge assets. In particular, this workshop focused on the following objectives.

- Review Communities of Practice kick-off on 22 February 2001
- Design final Knowledge Management Environment (KME)
- Deploy KME
- Assess Pilot Project to develop Lessons Learned

9.4. Attendees

Name	Code	Telephone	Email
Will Gex	40B	843-218-5635	gex@spawar.navy.mil
Henry Pinner	43A	843-218-5234	Pinnerh@spawar.navy.mil
Christy Eubanks	43CE	843-218-6762	Eubanksc@spawar.navy.mil
Deb Farinello	431	843-218-4328	Farineld@spawar.navy.mil
John Bevis	52	843-218-4654	Bevisj@spawar.navy.mil
Carol Bilbray	70	843-218-4692	Bilbrayc@spawar.navy.mil
John Linden	70	843-218-4078	Lindenj@spawar.navy.mil
Ric Cosgrove	70	843-218-4024	ric@spawar.navy.mil
Lisa Bonnaure	471	202-685-1214	Bonnaurl@spawar.navy.mil
Myra Rice	473	202-685-1819	Ricemj@spawar.navy.mil
Doug Pennington (VTC)	552DP	850-452-7691	Penningd@spawar.navy.mil
Dr. Geoffrey P Malafsky	DON CIO	703-764-1903	Gmalafsky@techi2.com

9.5. Results

9.5.1. Current Activities

The business integrators have been approved to begin a project to consolidate information on a web site. Since this is similar to a portion of the KM pilot project, the two should be linked to avoid duplication and provide the best service to the Command.

Content management is the most crucial aspect of sustaining the KM environment since the value of the KM initiative is based on the relevance and direct applicability of information to each person's needs. At this time, the following people are responsible for maintaining knowledge assets:

- Ric Cosgrove, Code 70 – KM is part of his performance criteria
- Deb Farinello, Code 40 – she is voluntarily leading a products and services focus group, which her supervisor said can be considered part of her formal tasking.

9.5.2. Video Interviews

Examples of the final video interviews were shown and discussed. The project team edited the videos during the previous few weeks. The videos were produced in streaming media format (Microsoft wmv) for posting on the Knowledge Management Environment web site. Examples of the questions covered in the videos are listed below. For each question, the experts who answered the question are listed along with a short statement from the answer and the play time of the segment in minutes:seconds.

1) What lessons have you learned about how to identify a good lead for capturing and growing business?
   a) John Linden: *We work heavily within our industry partners and universities to determine what the next technology curves are going to be. Understanding what the customer wants today and what the customer is going to want in the future, keeping yourself abreast of technology change is absolutely essential..* {1:13}
   b) Terry Simpson: *Not every customer has a problem that we can solve and not every customer has the funding requirements. It is ok to be selective about what we go after. We can't go after everything; we have to prioritize. Be objective with customers. {0:45}*
   c) *Will Gex: In capturing leads, you should try to avoid cold calls. There is a very low rate of return. It is better to grow business through existing customers. Trust is the key ingredient. With a cold call you have to develop that trust, which can be difficult from the beginning. With existing customers, that trust should already be in place.* {0:54}

2) What unique approach works for you that always captures the customer's attention?
   a) James Ward: *What I like to bring to a customer, that is unique, is that, first off, I go over with them the intellectual capital that we bring to the table for any business initiative. Secondly, I like to show them that we have actually done this type of work before. And thirdly, that we have a good understanding of the requirements that the customer has.* {2:02}
   b) Myra Rice: *I do a lot of research to make sure, prior to going to visit the customer, I find out as much as I can about their business and their organization. I do an initial call to get a feel for what that person is looking for so when I get into the organization I make sure I take the right team of people.* {0:56}

3) What lessons have you learned about how to expand work with an existing customer?
   a) Terry Simpson: *The key to expanding business with existing customers is focusing on, and constantly nurturing a strong business relationship. We have to be the "go to" people that can make our customer's jobs easier and answer their requirements.* {0:26}

b) Will Gex: *We are going to have the most success expanding our business through existing customers. As you work with customers, they begin to trust your judgment. Customers will talk about their needs. This can lead to other opportunities with that customer or with other organizations. Expanding existing customers is key to expanding our workload.* {2:02}

4) What are effective means of gathering client/customer/competition intelligence?
   a) James Ward: *Every year Navsea publishes an ACAT index. The ACAT index is a primary source which I think is crucial to our acquiring business intelligence. Secondly would be our network that we have established with our counterparts. SPAWAR is here to support N6 and N8. We need to be involved in fleet conferences. These are three ways to gather intelligence.* {2:06}
   b) John Linden: *Another thing that we have developed is a marketing checklist. The big problem that I have seen over many years, is going into a customer's community to market or develop new business without having done the exploratory things. I need to get the right answer to questions before I proceed down the path of spending production overhead money. ...* {1:59}

5) What is the single most important piece of advice you can give to SSC Charleston people?
   a) James Ward: *Business development typically is not captured with slick brochures, glossy pamphlets, or flashy cards. Business development is really based on the intellectual capital that you bring to the table. People don't often think of training and equiping the workforce as a marketing tool, but it very much is....*{1:38}
   b) John Linden: *The most important thing is to learn to listen to the customer. Understanding the customer's needs comes from listening and knowing what questions to ask and building a relationship with the customer based on trust. There is an expectation on the part of the customer. They ask for a service and they expect to get it at a reasonable cost and in a timely manner....* {1:56}
   c) Terry Simpson: *Our people must understand their work areas and understand the big picture of our command. We must use all of the avenues for support and assistance that we have. Communication is the key. Don't be afraid to ask questions. Our command can meet almost any need that you come across....*{1:03}

9.5.3. Community of Practice Kick-off 22 Feb 01

An online session with business development efforts was held on 22 Feb 01 for one hour to generate interest in the new Knowledge Management Environment, and in particular, several Communities of Practice. Two Communities of Practice, Business Development and Project Management, were started although only the Business Development community was widely publicized because of the online session with experts. A publicized online session for the Project Management community may occur in the near future if a panel of experts can be assembled.

The statistics for both communities during the one hour sessions are:

- 101 Total Registered Users, 33 Total Posts.
- Code 10 users - 1
- Code 30 users - 6
- Code 40 users - 43
- Code 50 users - 11
- Code 60 users - 17
- Code 70 users - 11
- Unknown users – 5

9.5.4. Project and Capabilities synopses

The pithy synopses of projects and capabilities have been collected and placed in a Microsoft Access database. Many branch descriptions are still missing but are being continuously added along with Points of Contact for each description.

The synopses are available on the KM web site at https://corpweb2.spawar.navy.mil/kme/ or at http://corpweb/kme/. A knowledge map is being created of all the owners of the critical knowledge within SSC-CHS. This knowledge map will also serve as the rapid pathway guide to continually updating and improving the synopses. A color coding scheme will be used to indicate the currency of the information with the following timing:

- Green – current. Lasts for 4 months
- Yellow – almost out-of-date. Lasts for 1 month. An automatic email will be sent to the asset owner.
- Red – out-of-date. An automatic email will be sent to the asset owner.

9.5.5. Knowledge Management Environment

The Knowledge Management Environment (KME) was built as a simple web site to house the knowledge assets collected so far. The KME is part of CorpWeb and will be expanded and modified based on the metrics defined and described in earlier workshops. The following figures show sample screens from the initial version of the KME.

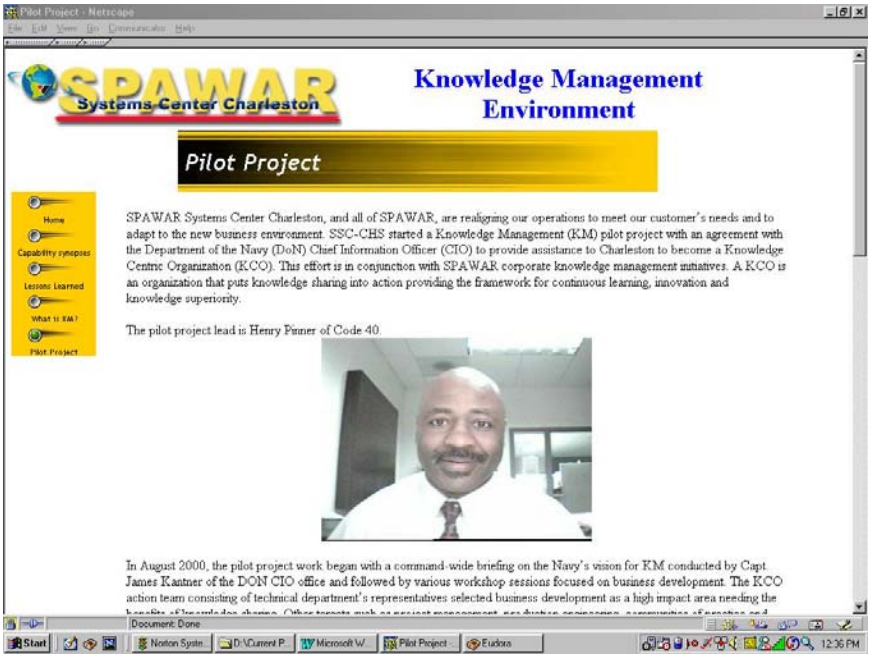

Figure 21 Pilot Project page of the SSC-CHS KME.

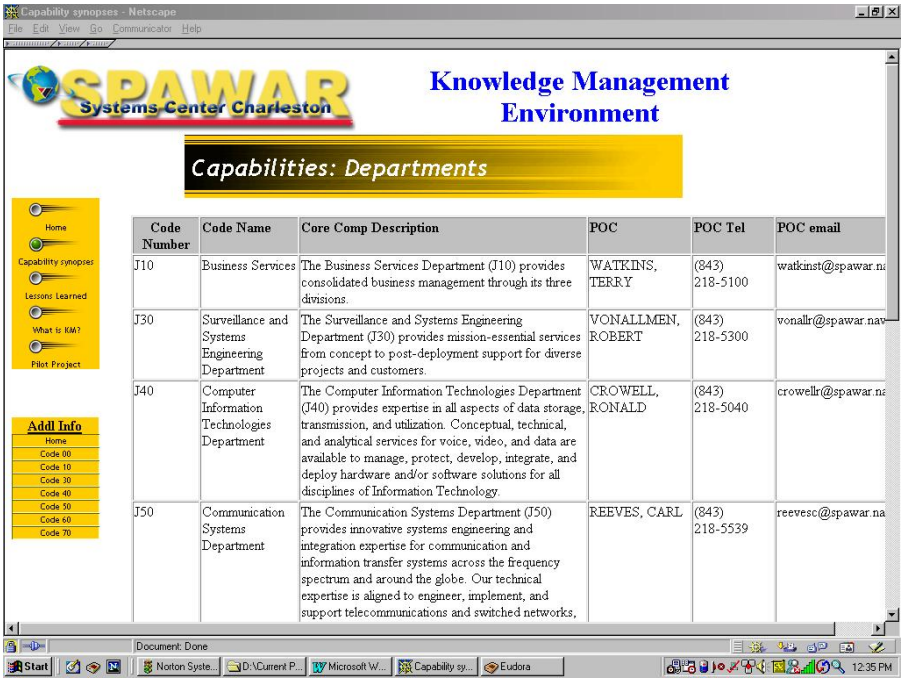

Figure 22 Capabilities synopses page for SSC-CHS Departments. Other pages display synopses for divisions and branches.

9.6. Lessons Learned on pilot project KCO implementation

The pilot project is far enough along that a review can yield important conclusions. Thus, the workshop participants were asked to openly comment on the project, and to point good and bad aspects. This feedback is valuable for two reasons: 1)it produces a Lessons Learned that can be used as the KM initiative expands outward from the pilot project team; and, 2)it allows DONCIO to improve the KCO model and implementation methods.

9.6.1. Local project team comments

- Threaded discussions for Community of Practice kick-off on 22 Feb 01
  - People sent Emails stating positive views
  - People are too busy to do much besides their core work
  - Possibly set aside a time dedicated to this activity so that it is part of people's jobs, such as is done with the Friday Brief
  - More preliminary logistics work is needed to avoid connectivity problems during the online session
  - Discussions should be integrated with email display on desktop so people can scan them the same way they do email for interesting topics
  - Add daily alerts to personalized Corpweb homepages on subscribed interests
- Pilot project timing
  - The pace should be faster
  - Trying to arrange workshops with the pilot project team present led to inevitable delays because of conflicting schedules.
  - Approximately a 1.5 month period was unusable from Thanksgiving through New Years because of annual leave and travel
  - Look for a quick win on a smaller project that is already underway
  - Discussion frequently went on tangents that slowed decision making
  - Tangential discussions were important to explore new culture and ways of thinking
  - Professional facilitator could help meetings progress but a facilitator's lack of subject matter knowledge will hinder the group's ability to make decisions on new cultural issues and processes
  - Less review and repeating of KM principles is needed as project progresses
  - DONCIO should provide templates of new processes and tools that can be implemented right away
  - Pilot project team can learn while implementing these templates instead of learning and creating new processes
  - These must be detailed processes useful for everyday workflow
  - Need a short cookbook of what to do
- Pilot project content
  - Need something tangible to work on from the beginning to maintain people's interest
  - There is a lot of great information on the CD but it needs to be organized so that people can quickly get an overview and then get more detail when it is needed- need a cookbook with a good Table of Contents and Index

    - Review reports should be consolidated and concise
    - Need to answer "what's in it for me?" from the start in everyday terms
    - Still don't really know what a Community of Practice is and how to start making one
    - Difficult to get people engaged since they view it as another time distraction
- Pilot project outcomes
    - There has been a major shift in understanding of KM and the need to do more than manage information, and to include people-based processes
    - This was an overhead activity from each department's own funds so it reduced participation because it conflicted with the need to minimize overhead costs
    - Management should show support by providing funding for this activity
    - This effort must grow outside of the pilot project and become part of the normal workflow
    - Pilot project team should become the new teachers and guides to bring KM to their groups
    - Business Integrators have started a new project that grew out of early KM workshops that seeks to manage information but that allows people to connect to the right person at the right time instead if just relying on the information management system

9.6.2. Summary by DONCIO team

The principal Lessons Learned are:

- The period of time from the beginning of the project to disseminating the first knowledge assets should follow a schedule of approximately three months working through any schedule problems
- A tangible product should be built from the start of the pilot project and continuously improved
    - The DONCIO team should help build some products (e.g. simple web sites, databases, collaboration sessions) when it will overcome time hurdles for the local project team even though they should build as much as possible to increase their learning
- Although team members may wish to speed up the project by using common meeting methods (such as professional facilitators, small subgroups, focused agendas, etc), these should be used sparingly since impromptu discussions are an important part of exploring new ideas
    - Too short a decision making process on what knowledge assets, tools, methods, and metrics are most important will lead to an incomplete understanding of the key differences between information and knowledge.
    - People need time to accept new cultural and business process concepts
    - A translation of KCO objectives into standard daily business processes should be developed to quicken acceptance of the KCO

- Communities of Practice should begin with a clear demonstration of specific benefits to potential participants to get them involved in addition to the general awareness briefing.

9.7. Future Plans

9.7.1. Communities of Practice

Awareness briefings will continue to be presented at various SSC-CHS sites. They should start including specific demonstrations of benefits as mentioned in the Lessons Learned above.

9.7.2. Knowledge map of SSC-CHS

Christy Eubanks is making good progress developing a knowledge map for the capabilities synopses knowledge asset. This will be completed and included in the Knowledge Management Environment web site.

9.7.3. Transition of SSC-CHS pilot project to corporate SPAWAR

The Lessons Learned and methods gained in the SSC-CHS pilot project will formally be transitioned to corporate SPAWAR with DONCIO assistance. The kick-off meeting for this transition project will be on 19-20 Mar 01 in San Diego.

9.8. Recommendations

The project is part of a larger corporate SPAWAR Knowledge Management initiative and should plan on aligning the processes and tools used and specified with the corporate program. In particular, the planned transition to corporate SPAWAR of the Lessons Learned and methods developed during the pilot project is an important phase of building a KCO in SPAWAR. In addition to the benefits of sharing the pilot project knowledge, the different needs and perspectives of corporate SPAWAR and the Systems Centers must be reconciled to ensure a successful and sustainable KCO across SPAWAR

The metrics defined in an earlier workshop should now be implemented and tracked. This will not only allow us to monitor usage and gauge preferred knowledge assets, but permit the team to adapt the knowledge collected, its organization, and distribution methods for the most effective system and processes.

10. Appendix A: KCO Map

10.1. OPAREA I- Homeport: Building Awareness

As you explore the Homeport you will learn how knowledge management can help you prepare for the upcoming Knowledge-Centric Organization deployment. Every deployment is different, yet most share a common language and understanding of operating procedures. The mission is to explore Homeport and develop an understanding of knowledge management fundamentals.

10.1.1. OpsCenter ALPHA: Changing World

Ultimately, what we're really after is knowledge. Knowledge to facilitate learning; knowledge for effective decision-making, and knowledge to achieve Knowledge Superiority. Knowledge is built on information and created within the individual. DoN identifies knowledge management as a process for optimizing the effective application of intellectual capital to achieve organizational objectives. This is built on a holistic approach to intellectual capital, which includes Human Capital, Social Capital and Corporate Capital.

10.1.2. OpsCenter BRAVO: Knowledge Management Framework

The framework for DON KM is built around five balanced concepts: technology, process, content, culture and learning. The important aspect of balance is to ensure we don't go down one path without bringing in the others. Knowledge management has brought focused attention to the importance of capturing the context along with information and knowledge artifacts (information that has supported the creation of knowledge but is stored as information). Context is unique at any given point in time. It is based on environmental factors, human interactions and recent events, and potential future actions that are possible. Knowledge systems capture the context along with decisions. If done correctly, KM requires getting the right knowledge to the right person at the right time, and using that knowledge in the right manner.

10.1.3. OpsCenter CHARLIE: Knowledge Management Implementation

DON implementation of KM is distributed. Champions are emerging throughout the Enterprise. The DON IM/IT Strategic Plan carries the commitment from the top to implement strategies that facilitate the creation and sharing of knowledge to enable effective and agile decision-making. More than any other nation, more than any other Navy, and more than ever before, we rely on the creativity, ingenuity, and intellect of our people. As we cross the threshold of the Information Age, we intend to realize this awesome potential in every corner of our Navy, by every person, as a highly interactive total team. Transcending even our current advantage in physical firepower, our Navy will be alive with the fire of shared understanding. There will be a steady

increase in information management and knowledge management as we understand the implications and importance of these efforts.

10.1.4. OpsCenter DELTA: What does success look like?

Out on the USS San Jacinto, Petty Officer Storm has run into a problem with a winch motor. Last year when experiencing the same problem he had to wait until the next port visit to get repairs done. With the advent of the Naval Marine Corps Intranet… While forward-deployed, Gunnery Sgt Jackson detects unusual patterns on his detection device, indicating the possible presence of a biological agent. He reaches back to the Center for Disease Control in Atlanta for advice, and via computer…

10.2. OPAREA II- Atlantis: Preparing the Organization

Last year a special ops boat located an uncharted atoll near the mid-Atlantic ridge - an atoll later determined to be the Lost City of Atlantis. Atlantis represents the *unknown* as you begin to create your Knowledge-Centric Organization. The mission is to explore Atlantis, gather salient features and develop an important understanding of what it takes to prepare your organization to become Knowledge-Centric.

10.2.1. OpsCenter ALPHA: Exploring Culture

Objectives: The objective is to study your organization to identify barriers to knowledge and information flow, as a starting point to develop a knowledge-sharing culture. The *outcome* of OpsCenter ALPHA is a better understanding of the enablers and barriers to knowledge-sharing within an organization. The *outputs* from OpsCenter ALPHA will include a completed assessment of the current knowledge management capabilities of your Command.

Key Topics:

1. Knowledge is Power vs. Knowledge-Sharing is Power
   If a person hoards information and knowledge, he or she may become known as an expert in a particular area with the likely benefit to the individual, but not to the organization. People have little incentive or are often not motivated to share knowledge with one who hoards, as they receive nothing in return. Thus a hoarder's overall knowledge may decrease in the longer term at the detriment to both the person and the organization. If people share knowledge (and are recognized for sharing knowledge) within an organization, several beneficial things can happen.

2. Reasons to Share
   People share knowledge for different reasons, but mainly because they are directly compensated or rewarded for doing so, but there are also some personal drivers.

Reciprocity means that people share knowledge with one another in the belief that, when they need to gather knowledge in the future, others will willingly share with them. *Repute* means that people share knowledge because they believe it will enhance their reputation and standing within the community. *Altruism* means the sharing of knowledge despite no direct compensation for doing so.

3. Process and Economic Barriers to Knowledge-Sharing
Aside from the more traditional cultural barriers to knowledge-sharing, there may be organizational barriers that inhibit the flow of knowledge. *Economic* barriers exist on a number of levels. *Process* barriers may be many and varied. The most pervasive is often that there is no effective mechanism to share. This is especially true in a large, geographically separated organization.

4. Starting a cultural Shift
Changing the culture of an organization is difficult. The key to success is consistency in approach. Cultural change of any kind is a long, slow process. It can be accomplished only by the conscious daily support of the concept of openly sharing knowledge throughout the entire organization.

Key Step

1. Conduct Organizational Knowledge Management Assessment:
The purpose of this step is to form an understanding of the potential drivers and barriers to knowledge-sharing within your organization. Your goal is to gain insight to these barriers and drivers by asking members of the organization questions on culture, leadership, technology, measurement, and knowledge-sharing processes. The Knowledge Management Assessment Tool, KMAT, is a tool to support this assessment.

10.2.2. OpsCenter BRAVO: Importance of Leadership

Objective: Work in OpsCenter BRAVO looks into the important role of leadership in creating a Knowledge-Centric Organization. The objective is to review leadership practices within your organization and to compare these with best practices in support of a knowledge-sharing culture.

Key Topics

1. Providing Leadership and Vision to Drive Behavior
An important component of successfully implementing a Knowledge-Centric Organization is providing leadership. Leaders must establish a compelling need for change and must communicate this need, such that employees understand the problems that need to be solved and the driving forces behind any changes made to

work practices. The role of the leader is to provide guidance and resources to support behavioral change and KCO development.

2. Dynamic Tension

Leaders in developing Knowledge-Centric Organizations need a vision of what the future organization will look like. The following dynamics often influence the success of any knowledge-sharing and management initiative and should be considered carefully: Rate of information flow, Richness of connectivity, Degree of anxiety containment, and Ratio of Tacit to Explicit knowledge. These dynamics can be managed in part through knowledge-sharing processes and technologies and their associated performance measurement systems.

3. Creating Leadership Buy-In

Those people leading cultural change and Knowledge-Centric Organization implementation are not necessarily recognized leadership within an organization in terms of rank. However, it is important to have the buy-in and backing of leadership. To accomplish this, it may be necessary to educate those in leadership positions as to the benefits of a Knowledge-Centric Organization. Work to understand the investments, in terms of time and money, that leadership will need to make in order to support the implementation of the KCO vision.

10.2.3. OpsCenter CHARLIE: Focus on User Needs

Objective: Work in OpsCenter CHARLIE involves investigating knowledge worker needs to implement a Knowledge-Centric Organization. The objective is to focus on the individuals and groups within your organization and identify the ways in which a KCO will improve their day-to-day jobs.

Key Topics

1. Understanding Knowledge Worker Needs

To gain internal support in implementing a Knowledge-Centric Organization, individuals need to feel that sharing knowledge will help them in their everyday work. Taking the time to understand the actions performed by personnel and demonstrating the ways in which increased knowledge flow will improve the work environment will increase buy-in to the KCO effort. There are a number of other reasons Sailors, Marines and Civil Servants would want to embrace the KCO concept. 'Seeing is often believing,' so be prepared to show results through examples and storytelling to help demonstrate your point.

2. Fostering Innovation – Open Space

Recognizing knowledge worker needs is an important step in building a KCO. However, one must go a step beyond recognition and create an environment in which knowledge workers feel comfortable elaborating on their needs and expressing

concerns. Organizations can foster innovation by creating an "open space" for knowledge workers. "Open space" comes in many more forms: an online chat room, a threaded e-mail discussion, a weekly in-person discussion forum.

10.2.4. OpsCenter DELTA: Relationships

Objective: Work in OpsCenter DELTA will involve looking into building relationships to help implement a Knowledge-Centric Organization. The objective is to understand the various communities that currently exist within and beyond your organization and the way that knowledge flows through informal as well as formal channels.

Key Topics

1. Social Networks and Knowledge Flow

Often what needs attention is the informal organization, the networks of relationships that employees form across functions and divisions to quickly accomplish tasks. These informal relationships can cut through formal reporting procedures to jump-start stalled initiatives and meet extraordinary deadlines. Looking at a network of relationships can help you to identify the integrators, or the employees who are seen by many as experts or who are trusted as an information source.

2. Communities of Practice and Communities of Interest

Understanding the existence of Communities of Practice or Communities of Interest within your organization will give you additional insight to the way in which knowledge is currently shared and might potentially be shared in the future. In the development of a new KCO, you should think about the benefits of linking people with common working practices together across your organization and other organizations.

10.2.5. OpsCenter ECHO: Communications

Objective: Work in OpsCenter ECHO will involve looking into the communications planning necessary to implement a Knowledge-Centric Organization. The objective is to identify key audience and stakeholder groups within your organization and to analyze different communication methods as an effective means for sharing information and knowledge.

Key Topics

1. Audience and Stakeholders

Developing an understanding of audience and stakeholder groups will make it easier to plan and implement an effective communications strategy. Level of impact or involvement is usually a good first step in analyzing the different audience and

stakeholder groups within an organization. Communications can then be targeted to different groups, with potentially more complex information going to those with a higher level of involvement. it is important that concepts such as receiving style and available time be taken into consideration to maximize the attention given to the information by the recipient and thus to maximize the likelihood the information will be used as efficiently and effectively as possible.

2. Communicating Context

One of the most difficult things to do when transferring or storing information is to make that information useful to someone else by giving it context. Communicating context around information to aid in the use of information and knowledge is key to enabling effective decision-making in a Knowledge-Centric Organization. The John C. Stennis Battle Group uses collaborative technology and application sharing software to enable the sharing of context as well as information. Members of the group are able to view the same information real time from their different locations as they collaborate and make both strategic and tactical decisions.

10.3. OPAREA III- Cave Island: Building Knowledge-Centric Organizations

Let's explore Cave Island! Cave Island's rugged terrain is often difficult to negotiate as you venture into new territory. To assist you there are three OpsCenters, each positioned to inform and to help complete a set of tasks, which will move you toward your goal of becoming Knowledge-Centric. The mission is to move through these OpsCenters and explore our own organizations, create processes, motivate personnel, and design a Knowledge-Centric system.

10.3.1. OpsCenter ALPHA: Envision and Strategize

Objectives: Work in OpsCenter ALPHA centers on the identification of an organization's core strategic process (based on mission), and the assessment of this process to identify those actions that are critical. The first objective is to identify the knowledge, skills and information required to support people in performing critical actions, and begin the process of sorting these requirements into 'content centers' so that they might be addressed. The second objective is to uncover how to develop a communications strategy for the transfer of knowledge between individuals and organizations.

Benefits

- Understanding your key knowledge requirements.
- Understanding the interactions within your Command.
- Identifying key personnel and the knowledge they must share.
- Establishing the foundations that will help you become a more agile decision-maker.

Key Topics

1. Knowledge, Skills, and Information

It is important, when envisioning your Knowledge-Centric Organization, to understand what information, knowledge and skills are required by people in order for them to take action or make a decision. Building this picture of knowledge, skills and information requirements will enable you to design processes to ensure that these requirements are met, creating the best environment where the best decisions can be made and appropriate actions can be taken.

2. Clumping and Clustering

The human brain is capable of taking a new piece of information and assessing its relevance to all of its existing pieces of information to create links. This "clumping" of information about different things, which are brought together within a given context, is the basis for decision-making. If the Knowledge-Centric Organization is able to help the human process of "clumping" by organizing information and knowledge around key decision points, decisions can be made more efficiently and effectively. If the Knowledge-Centric Organization is able to "cluster" information and knowledge around a subject or topic area, new knowledge or innovative practices can improve actions or processes.

3. Conducting a Knowledge/Information Audit

One of the "quick wins" of assessing the knowledge, skills and information needed to support the core strategic process and mission of an organization is that often information and knowledge are collected and stored but never used. Conducting a "knowledge audit" to find out how information is collected, stored and reported, and how the reports are used (if at all) can be beneficial in streamlining the information flow within an organization, so time and effort is spent in processing only the information that is useful. A knowledge audit looks at what information is available and what is used.

4. Technology in Support of Knowledge Flow

Technology is often used to store information, but it is useful to think of the ways in which technology can enhance the *flow* of information and knowledge. Aside from conventional databases as storage facilities there are many other technologies that may be leveraged in the Knowledge-Centric Organization. When assessing knowledge, skills and information flow, it is essential to think beyond reports and databases, to telephone calls, email, voicemail, radio, video, the Internet and beyond. In today's economy, people receive their information in all sorts of ways.

Key Steps

1. Identify the Core Strategic Process

The purpose of this step is to identify your Command's core strategic process. A core strategic process is the primary process that the command follows to accomplish its

mission. The goal in assessing your Command's core strategic process is to list the steps in that process and develop a "map" that shows how this process touches and involves different parts of your organization. Understanding the core strategic process will help focus on the knowledge, skills and information needed to support that process.

2. Identify Critical Actions

In the previous step you mapped the core strategic process. Now you will determine to what extent each of the tasks in that process is critical to mission success. A Critical Action (CA) is an action essential to mission accomplishment. In the deployment cycle, for example, the final training certification is essential to deploying successfully. Identifying CAs is important because it is necessary to understand when and where people need to make key decisions and act upon them. Recognizing the knowledge, skills and information that people need in order to complete CAs is also a crucial factor in building a KCO.

3. Identify Critical Action Personnel

Now that you've identified a core strategic process, "mapped" it, and prioritized the critical tasks involved, your next step is to identify the key people who either make the decisions or physically perform the CAs. This will help identify requisite the knowledge, skills and information requirements for these CAs. The goal is to produce a list by job title of key personnel (which may include more than one person per task).

4. Identify Knowledge, Skills, and Information Requirements

To build a Knowledge-Centric Organization, an understanding of requisite knowledge, skills, and information detail is necessary. By identifying these requirements we can then design and deploy a system that delivers relevant information within appropriate context to enable skills and knowledge transfer to take place.

5. Aggregate Knowledge Needs into Content Centers

In the previous step more than one person may have been identified as having the same knowledge needs. This shared need is the basis for Communities of Practice - people, from different organizations, whose responsibilities require access to similar information. Since we are building a KCO and are inside the walls of the organization, we aggregate similar knowledge, skills, and information needs into content centers. Later, when other KCOs emerge, these content centers will also link via Communities of Practice.

6. Design a Communications Strategy

Now it's time to develop a communications strategy that updates as this tool progresses. A good communications strategy builds awareness of program goals, encourages collective ownership of the KCO, and informs the organization and its stakeholders of progress. The goal is to exploit existing communications channels, and to convey timely, accurate and useful information to your audience. A properly

constructed communications plan allows for the quickest, most efficient and dependable transfer of information.

10.3.2. OpsCenter BRAVO: Develop Performance Measures and Incentives

Objectives: Work in OpsCenter BRAVO will help to set the measurements of success for your Knowledge-Centric Organization. You should begin the design of Performance Measurement Systems early in the process of designing and implementing a KCO to allow for the collection of baseline data, so that improvement can be most accurately traced and any weaknesses corrected. It is important to understand that the outputs from OpsCenter BRAVO are initial listings and plans. These will be further built upon as you progress through OpsCenter CHARLIE and beyond to design, deploy, operate and sustain.

Benefits

- Understanding Potential Timesaving
- Understanding the subject areas that are of particular importance to personnel
- Understanding which parts of the Knowledge-Centric Organization are working and which are not

Key Topics

1. Outcome, Output, and System Performance

Performance measures are the "vital signs" of the Knowledge-Centric Organization. Properly designed, they provide three types of indicators: Outcome (Strategic) Measures, Output (Process) Measures and System Measures. Distinguishing between the three types of measures is important. Outcome Measures gauge mission accomplishment effectiveness. Output Measures gauge efficiency of process progress. System Measures gauge the operating capability of systems over time.

2. Performance Accountability, Incentives, and Rewards

Establishing clear performance expectations before beginning an assignment creates the link between outcome/output measurement and accountability. By establishing measurable quantitative and qualitative metrics, personnel will know how well they are performing on an individual level as well as how much their effort is contributing to overall mission success. Implementing performance measures for knowledge-sharing shifts the focus of responsibility and accountability to the individual. Individuals will become more interdependent, relying on one another for information, advice, and direction

3. Qualitative and Quantitative Measures

Measures may be quantitative or qualitative. Quantitative measures, based on collected data must be checked for accuracy and other influencing factors to ensure

that the measures are valid. Provided that the measurement data is relatively easy to collect, quantitative measures are generally fairly easy to aggregate for analysis. Qualitative measures might, for example, include anecdotal evidence and survey feedback. Qualitative data can be more difficult to aggregate and report upon, but should not be ignored.

Key Steps

1. Develop Outcome Measures

In this step you will look at the development of outcome measures for the implementation of a KCO. Ask, "How will we know if the KCO is helping improve mission performance and helping improve our core strategic process?" Upon completion of this step you should have a set of measures for mission performance. Tracking these measures at fixed intervals should allow you to understand the impact of the KCO on your organization.

2. Develop Output Measures

In this step you will look at the development of output measures for the implementation of a KCO. Ask, "How will we know if the KCO is running as we want it to?" If the KCO is not properly operating, you cannot expect improved productivity or mission success (outcome). Upon completion of this step you should have a set of measures for KCO performance. Tracking these measures on an ongoing basis will help you to understand the participation levels of personnel in the KCO effort, and will thus help you to design interventions to ensure that things run smoothly.

3. Develop System Performance Measures

In this step you will look at the development of system performance measures for the KCO. Ask, "How will we know if our systems are fully operational, delivering a consistently high level of service?" If KCO systems are not operating, then you cannot expect user participation in the KCO process (output), nor can you expect improved productivity or mission success (outcome). Thus the three sets of measures are linked. Upon completion of this step you should have a set of measures for system performance. Tracking these measures over time will enable you to determine whether system performance is an influencing factor over user participation, and is thus affecting your output measures.

4. Develop Incentives and Rewards

In this step you will look at linking incentives and rewards to your performance measurement system, and consider methods of motivating people to exhibit behavior that will be favorable to the implementation and operation of a KCO. Upon completion of this step you will have developed a set of incentives and rewards related to your performance measurement system.

5. Communicate Measures

In this step you will look at updating your communications plan to include messages about performance measures and incentive/reward approaches. Upon completion of this step, you will have a newly updated communications plan which will cover implementation of these new performance measures and incentives.

10.3.3. OpsCenter CHARLIE: Design and Deploy

Objectives: After all the preparatory effort, the work in OpsCenter CHARLIE will actually create your KCO. Knowledge management theory and ideas become explicit and visible, and you will link users to each other, enabling personnel to get the right information to the right people at the right time to make the best decisions and achieve mission success.

Benefits

1. Produce measurable improvements in command performance

Key Topics

1. Tacit and Explicit Knowledge
   There are two types of knowledge, tacit and explicit. Tacit knowledge is personal, it is held within the individual's mind and is usually context-specific and therefore very difficult to formalize and communicate. Explicit or "codified" knowledge, on the other hand, refers to knowledge that is transmittable in formal, systematic language.

2. Knowledge Creation and Transfer
   Knowledge creation and transfer occurs in four different ways as described in Tacit and Explicit Knowledge. Nonaka and Takeuchi called them different learing styles. Skills building relies on socialization, or the sharing of experiences. Modeling is a process of articulating tacit knowledge to make it explicit. Examples of networking and resourcing related to the musical theme presented above might be the collection of many different pieces of music by the same composer. Internalization is a process of embodying explicit knowledge into tacit knowledge. It is closely related to "learning by doing.

3. Creating a Taxonomy
   A taxonomy is simply a framework for arranging or categorizing information and knowledge so that people can find it and use it effectively. It is not necessary to pick just one way of arranging information and knowledge, but it is important to evaluate the many different ways before beginning any kind of knowledge base design. Categorizing or clustering knowledge, skills and information resources around topic areas often leads to the most innovation and improvement of material. A second way of arranging knowledge, skills and information is by knowledge transfer modality, which is closely related to learning style. It is often easy for the user to relate to and

search for information if it is categorized around the core strategic process. Decisions dictate expected actions and outcomes. Organizing, or "clumping" around decisions allows an organization to make predictions based on past decision outcomes and enhances decision-making capabilities for the future.

4. Intermediation – Knowledge Rolls
   Intermediaries, individuals responsible for connecting people to the knowledge and information they require, can be crucial in the development of an effective Knowledge-Centric Organization. These intermediaries, often titled "knowledge managers" or "knowledge brokers" can help people to assess and clarify their knowledge needs. Proactively capturing and disseminating knowledge and taking responsibility for the execution of daily administrative tasks such as maintaining the accuracy and relevance of information contained in the knowledge base is a key part of the knowledge intermediary role.

10.4. OPAREA IV- Sea Base: Operating Knowledge-Centric Organizations

As you explore Sea Base, you will develop processes and capabilities to operate your Knowledge-Centric Organization long term, continuously evaluating its performance and remaining adaptable as you re-strategize to meet the changing needs of your Command over time. There are three OpsCenters in Sea Base, each positioned to provide you with information and help you complete a set of tasks, to enable you to manage and sustain your Knowledge-Centric Organization. Your mission is to move through these OpsCenters as you develop your Knowledge-Centric capabilities, ensuring that you have a strong basis for long-term survival and growth.

10.4.1. OpsCenter ALPHA: Operate and Sustain

Objectives: Work in OpsCenter ALPHA centers on the building of processes by which the knowledge manager can successfully operate and maintain the knowledge management system. Once the knowledge base site is launched, the community knowledge managers must continuously improve their communities, ensuring that they are fully operational.

Benefits

1. Providing for rich knowledge flow and high quality content supported and enhanced by valuable community dialogue is necessary for KCO survival and development, supporting the critical actions and decisions of our people and enabling the future adaptability and power of the Department of the Navy.

Key Topics

1. Management of Expertise

How do you know who has what level of expertise in a particular area, where they are, and how their knowledge is most effectively utilized? Pulling in Subject Matter Experts to help in critical decision-making can lead to a higher quality outcome. The decision may be made more quickly if the tacit knowledge of a human is utilized rather than explicit information contained in a report or in a database that may be lacking in appropriate context. Having experts discuss information can lead to further insights and new knowledge for the organization.

2. Mentoring and Coaching

Best practice organizations use mentoring and coaching to transfer tacit knowledge between employees. Research shows that people to people learning effects the highest transfer of knowledge. In particular, training programs or apprenticeship relationships, where new recruits are assigned a "buddy" or mentor who may be a year or two ahead of them in the organization, are used to help the new recruit to "learn the ropes". Mentoring and coaching relationships can help to maintain the balance of knowledge transfer modes within an organization, such that learning is not solely expected to happen through explicit training courses, manuals, etc.

3. Visualization

The use of pictures, diagrams and models can help in the learning process. Diagrams are particularly helpful when direct human contact and demonstrations are not possible, and are often used to transfer information about physical or mechanical activities. The use of diagrams and models can also be helpful in the explanation of theoretical or conceptual information. The importance here is the formation of a strong analogy to which the learner can relate.

4. Push vs. Pull

When users interact with a knowledge base system, they are most likely pulling information to satisfy their knowledge requirements. They make the decision as to when they will interact with the system and what information they will draw from it. Users will pull from the system more frequently if they continue to find the information they require. The knowledge manager (or the knowledge base automatically) can also push information to the user. This is best done only for important information in order to prevent "information overload".

5. Learning Histories and Storytelling

Capturing a series of events from a variety of perspectives, to try and gain further insight into what happened and how different people's feelings and consequent actions influenced events, is the basis for conducting a learning history. Storytelling, the construction of fictional examples to illustrate a point, can also be used to effectively transfer knowledge. Analogies and stories are often used to aid in the transfer of particularly complex information and knowledge to give the human mind something with which to relate.

6. After Action Reviews and Action Learning

After action reviews are part of the Action Learning process in which participants plan an action, carry it out, reflect upon it and share that reflection in a group session as they plan to carry out the action again and improve it. This cycle can repeat many times and leads to continuous process improvement and innovation. The Center for Army Lessons Learned (CALL) uses AARs, or after action reviews, to aid continuous learning within the organization.

Key Steps

1. Scan: Develop an Internal and External Knowledge Acquirement Process

The purpose of this step is to ensure that the organization possesses the knowledge it needs to complete its core strategic processes. The knowledge, skills and information requirements documented during the OPAREA III - OpsCenter ALPHA will be critical to the scanning process. It is important for the knowledge management team to scan the environment and identify and improve the sources of knowledge, skills and information so that it is possible to build and sustain the content for the knowledge base. On completion of this step, you will have, for each KSI requirement, an understanding of whether this information exists internally or externally to the organization. You will also have developed processes to obtain this information, knowledge or skill.

2. Dialogue: Create and Sustain a Dialogue Between the Users of Your Knowledge Management System to Promote the Flow of Information:

The next step is to create a dialogue within your organizational content communities to encourage improvement and innovation around the core strategic process. By instigating dialogue within the knowledge community you can facilitate building content for the Enterprise. During this step you will perpetuate the flow of knowledge through the system.

3. Aggregate: Construct Knowledge Relationships

In this step you will look at the aggregation ("clustering" or "clumping") of content, either for decision-making, to show patterns or trends, or to package together to produce new, useful knowledge. Knowledge management is a process of creating, updating and sustaining the knowledge base. The actual process of managing the command's knowledge will demand many resources from the organization. One of the most important aspects of knowledge management is refreshing the information within the knowledge space to ensure that it is accurate and up-to-date, and distilling good ideas into highly valued nuggets of knowledge. During this step you will need to establish a knowledge management framework - a series of processes by which the system can be managed.

4. Exchange: Route Knowledge to Users

In this step, you will look at disseminating the key knowledge nuggets to your user population. By now you have scanned for the information, encouraged dialogue and clumped or clustered knowledge. It is necessary to take what has been gathered, clumped

into knowledge nuggets and categorized, and now disseminate it using a combination of both "push" and "pull" techniques.

10.4.2. OpsCenter BRAVO: Measure Performance

Objectives: Work in OpsCenter BRAVO centers on the evaluation of your knowledge management system's performance based on outcome, output and systems performance measures, and an assessment of the stickiness of the system with a re-evaluation of incentives and reward schemes.

Benefits

1. Measuring performance is key to understanding in which areas you excel and which areas need further development. Outcome-based performance measures assess a KCO's contributing effect on mission performance: Cycle Time, Total Ownership Costs, and the Quality of mission accomplishment. Output-based performance measures evaluate the daily operations of the KCO process and the participation of users in the system.

Key Topics

1. Measuring Outcome

The outcome measures for implementation of a Knowledge-Centric Organization should be assessed on a regular basis for improvements in the core strategic process. Having data points from the time prior to KCO rollout will help you to assess the initial process changes that may have occurred due to implementation of the KCO. It is important to note that all changes to working processes, such as the implementation of a KCO, are likely to cause some minor performance fluctuations in the short term as people become accustomed to the new system.

2. Output Measures and System Performance

Output and system performance should be measured on a continuous basis so that corrections can be made to the system in a timely manner. It is important that users do not become disgruntled and disconnected from the KCO due to poor system performance. Output measures can also be more positively used to concentrate efforts on knowledge transfer methods and areas of the knowledge base dependant upon usage and feedback. In the initial stages of KCO development it is wise to "follow the energy".

Key Steps

1. Assess Outcome Measures

In OPAREA III you developed measures to gauge your system's effectiveness with regards to Time, Cost and Quality of service performed. During this step you will employ these measures to gauge whether or not the KCO has optimized any of these or other performance factors. The key goal in establishing performance measures was to evaluate the people, the customers and the process to determine if the knowledge base and knowledge transfer processes are working to create a more effective organization.

2. Assess Output Measures

During this step you will review all of the output-based performance measures developed in OPEAREA III. These measures will be used to evaluate output aspects of the knowledge management system. The data will be collected and aggregated, then evaluated and summarized.

3. Assess System Performance Measures

OPAREA III yielded measures for gauging the systems performance of your Intranet web-site. These measures will provide you with an idea of the system failures within your KCO, which may have led to poor performance in terms of output and outcome measures. Upon completion of this phase, you will have produced a report describing the systems performance of your KCO to complement those produced in the previous two steps.

4. Assess Incentive and Reward Schemes

At the inception of this project, incentive and reward schemes were created. These were intended to encourage the adoption of the knowledge-sharing system by personnel. Theoretically, the command could promote understanding and usage of the system by providing incentives to induce personnel to contribute to it. During this step you will review your incentive and reward schemes and determine whether they are effective in promoting knowledge contribution and advancing the use of the knowledge management system.

5. Produce Community Report

In this step, you will bring together your analysis of each of the sets of measures to look at the KCO as a whole. Your objective is to identify those aspects that are contributing to the success of the KCO and the success of the command as a whole. Looking at your three key sets of measures will provide you a good overall picture of the system.

10.4.3. OpsCenter CHARLIE: Assess, Validate, and Restrategize

Objectives: Work in OpsCenter CHARLIE centers on the assessment of the findings of your KCO benchmark report, the validation that your measures are appropriate, and a step to re-strategize your process approach in light of conclusions to best align actions with your organization's mission.

Benefits

1. As the environment changes and further technological advances are made, it will be important to re-assess your organization, its core strategic processes and the knowledge transfer that supports those processes such that the organization can continue to adapt.

Key Topics

1. Benchmarking

The ability to compare and contrast the knowledge management methods of your command with those of other commands across the Department of the Navy and with other organizations outside DoN may help you to consider new ways of innovating and moving forward.

2. Continuous Improvement

Various knowledge transfer methods have been discussed within this model. You may have decided to concentrate on specific knowledge needs in support of specific critical actions in your first iteration of KCO development. Now it is time to look back at the decisions that were made, and fill in the gaps to address additional knowledge requirements.

Key Steps

1. Conduct Gap Analysis

The purpose of this step is to identify the gaps between the current knowledge management strategy, mission, and profile as compared to what will be necessary to realize the desired state with regards to knowledge management in your Command. The Gap Analysis tool will help your organization to identify the forces and factors in place that support or work against the implementation of your knowledge management system. Once these factors have been identified, the positives can be reinforced and/or the negatives eliminated or reduced.

2. Validate Performance Measures

The purpose of this step is to validate system and personnel performance measures and ensure that the measures identified are comprehensive, are prioritized appropriately, and enable personnel to meet expectations within a specified time frame and budget. Operationally, during this step you will evaluate user concerns. Expressed user concerns must be addressed in order for your organization to utilize the web-site in the most efficient way possible. Feedback is an extremely useful way to quickly target areas of conflict within the system. Revisiting performance measures and analyzing the data that has been collected through previous phases will expose mismatches between actions and intended outcomes.

3. Re-Strategize

Re-strategizing involves rethinking your organization's approach to implementation and motivating personnel in light of outcomes of established performance measures, feedback, and mission success. The purpose of this step is to establish a common method for you to creatively and efficiently generate a high volume of ideas on refocusing performance measures and target problem areas by creating a process that is free of criticism and judgement. Re-strategizing encourages open thinking, enables your personnel to be involved and enthusiastic so that a few people do not dominate the entire group, and motivates your personnel to build on each other's creativity while staying focused on their joint mission. Re-strategizing also involves adding, deleting, or modifying the KCO structure and the operational process of the web-site.

10.5. OPAREA V- Space Station: Brokering Knowledge

Let's explore the Space Station! Here, we move to the highest level of KCO operation - Brokering Knowledge. There are two OpsCenters in the Space Station, each positioned to inform and to help achieve optimum value from Knowledge-Centric Organizations. The mission is to move through these OpsCenters and explore both knowledge creation and brokering processes. Knowledge brokering is the process of linking disparate knowledge providers with those in need, both inside and outside the organization. In this OPAREA, knowledge brokers are classified by the type of brokering they perform. Knowledge brokering is a desired capability of all knowledge workers.

10.5.1. OpsCenter ALPHA: Intermediation

Before developing an understanding of intermediation (knowledge brokering), it is important to look at how organizations create knowledge. A high level explanation of knowledge creation and transfer can be found in OPAREA III--OpsCenter CHARLIE. Here in OPAREA V you will further explore the theory behind knowledge creation and the reasons for promoting knowledge transfer throughout and beyond the organization. The information in this section is based on work by Nonaka and Takeuchi in their seminal book, *Knowledge Creating Companies*. The "Creating Knowledge" chart above depicts, in the left-hand graphic, the four modes by which knowledge is transferred. Tacit knowledge (that which is internalized in each of us) and Explicit knowledge (that which is codified in some form of media) are converted back and forth in four combinations or knowledge transfer modes. Each of the four quadrants aligns to a preferred leaning style - a preference that is specific to each individual. This is not to say that if you have a Quadrant I (tacit to tacit) learning preference that you don't learn by way of Quadrant III (explicit to explicit), but that each of us has a preferred way of receiving new knowledge. The "Creating Knowledge" Work Level graphic, above, shows four organizational levels rotating clockwise from individual to inter-organizational. The idea is that individual knowledge needs to circulate

to the group and organization to be of full use, leveraging human capital through social capital to corporate capital. In *Knowledge Creating Companies*, the authors demonstrate through numerous case studies that in creating new knowledge, a dynamic process is necessary to effectively rotate through all eight quadrants simultaneously. The graphic to the far right depicts this notion. Exchange occurs as all learning styles are tapped into (that is tacit to tacit, tacit to explicit, etc.), and as this learning process rotates simultaneously through the organization, small ideas are exchanged with individuals across the Enterprise who may have different learning styles and perspectives. Through this dynamic interchange, ideas are twisted, pulled and reapplied until they become innovative solutions. Underlying this knowledge creation and innovation theory is the assumption that exchange is occurring effectively within each of the eight quadrants. The exchange process can be self-directed, or it can be brokered, i.e. intermediaries can be put in place to facilitate knowledge transfer. Individual exchange is optimized through Building and Operating KCOs (the first and second operating levels of a Knowledge-Centric Enterprise), see OPAREA III--OpsCenter CHARLIE, and OPAREA IV--OpsCenter ALPHA. Brokering inter or intra-organizational knowledge then becomes the third, and most sophisticated, operating level of the Enterprise.

10.5.2. OpsCenter BRAVO: Transacting Knowledge

OpsCenter ALPHA introduced knowledge brokering as the top operating level of all KCOs. Knowledge workers, acting as intermediaries, transfer either tacit or explicit knowledge from provider(s) to those with a specific need. As interfacing facilitators, it is important for them to clearly understand individual or organizational knowledge needs. For the purpose of optimizing their function, four brokering archetypes are defined:

Quadrant I: Facilitator
A knowledge facilitator helps to coordinate the transfer of tacit to tacit knowledge. A facilitator might arrange a roundtable discussion between two or more parties to share best practices. For example, Arthur Andersen's Focused Accelerated Solution Team (FAST) connects practiced subject matter experts from across industry with senior business executives using a series of conference calls, meetings and virtual roundtables. The confidential conversations create a rich dialogue between the brightest minds in business and focus on market trends and the sharing of innovative best practices.

Quadrant II: Harvester
A knowledge harvester intermediates the transfer of tacit to explicit knowledge in a similar fashion as a book editor might bring together the thinking of several knowledgeable individuals into a book. Here, a knowledge harvester might recognize a market need or, because of his or her expertise, be asked by a publisher to facilitate the transfer of individual expertise knowledge into an explicitly written form such as a manual, methodology or training course.

Quadrant III: Expeditor

A knowledge expeditor facilitates the transfer of explicit to explicit knowledge. This is an interesting form of knowledge brokering because it doesn't necessarily take a human being to be an expeditor. The Internet is greatly accelerating this brokering form as sophisticated search engines and "intelligent agents", many based on natural language, deliver highly specific open source news and information. This can be information from within an organization, beyond an organization, but within an Enterprise or beyond.

Quadrant IV: Instructor
A knowledge instructor intermediates the transfer of explicit to tacit knowledge. An instructor conveys the idea that a highly explicit curriculum is being taught or conveyed to the individual. Computer-based training, and varying forms of technical training are generalizations of this brokering category.

10.6. OPAREA VI- Fifth Dimension: Building Communities

You're on the final leg of the journey to becoming a Knowledge-Centric Organization. This port of call involves establishing Communities of Practice (CoP) within the organization. CoPs enable organizations to become successful Enterprises that create, share, apply, and value knowledge. The mission of this OPAREA is to understand why CoPs are important, learn what is involved in building CoPs, and maximize the effectiveness of CoPs within an organization. There are four OpsCenters here in the Fifth Dimension. Each of the four OpsCenters reinforces that learning is a process of social participation.

10.6.1. OpsCenter ALPHA: Understand Communities of Practice

Objectives: Why Communities of Practice? This section will address this question, discuss the major characteristics of CoP, and build an understanding of how CoPs add value to the organization and mission success.

Key Topics

1. What is a Community of Practice?
Collaboration, innovation, and knowledge-sharing are at the core of Communities of Practice. CoPs are driven by a common purpose and managed by a set of processes for sharing knowledge. CoPs represent a web of individuals connected together through a common language and set of goals. They can take many different forms, providing a base for individuals to collectively build things, solve problems, learn and create new knowledge. Members of CoPs share tacit experince through interaction and dialogue, building relationships, creating meaning, persuading and influencing.

2. How is a Community of Practice different from a Community of Interest or Content Center?

Communities of Interest are groups of individuals with a common interest. This interest does not necessarily relate to their day-to-day work or current tasking. An example might be "subscribers to *National Geographic*." Subscribers may hold different jobs, but they all have a common interest in reading *National Geographic*. That interest can range from a passing interest to passion, from an "I know someone who does this" interest to a "I'm going to learn how to do this" interest. A Community of Interest, therefore, differs from a Community of Practice in that participants are not connected by a common element of practice.

3. Becoming an effective Community of Practice

In summary, Communities of Practice share a domain of practice; cross operational, functional and organizational boundaries; and define themselves by knowledge, not tasks. They are managed by establishing and developing connections between individuals and organizations, and focusing on value added, mutual exchange and continuous learning. CoPs have an evolving agenda as participant knowledge builds and related areas of exchange emerge. The most effective Communities of Practice align with strategic direction, and articulate what they want to achieve and why they exist. Effective CoPs may collaborate on a work product, build new capabilities, and seed strategic investments in new areas.

4. Why Communities of Practice?

Communities of Practice provide the best means for enabling organizations to share knowledge Enterprise-wide. Organizations are strengthened through an improved network of contacts and better results. Individuals benefit through peer-group recognition and continuous learning.

10.6.2. OpsCenter BRAVO: Design Communities of Practice

Objectives: OpsCenter BRAVO focuses on designing Communities of Practice within the Enterprise. This involves identifying existing domains of practice, aligning CoPs with strategic direction and mission goals, and integrating all individuals, organizations, and CoPs within the Enterprise. Designing Communities of Practice requires patience, persistence, and commitment. OpsCenter BRAVO outlines the process of establishing Communities of Practice and highlights key issues to consider as the CoP develops.

Key Topics

1. Stepping Stones: Building a Community of Practice

Communities of Practice are key to an Enterprise's competence and to the evolution of the Enterprise. CoPs often take on a life of their own-negotiating their own path, creating their own methodologies and discovering cutting edge solutions that apply to all levels of

the Enterprise. CoPs offer opportunities for innovation because they can reflect new perspectives, helping to create processes, relations, and shared definitions throughout an Enterprise. CoPs that are proactively developed through an explicit approach take time and effort to become effective. Potential key actions in building Communities of Practice are: Establish, Strategize, Identify, Develop and Support. Remember that CoPs can exist at many levels of formality.

2. Community of Practice in Action
Successful CoPs create environments that support creation and sharing of knowledge. CoPs in action develop initiatives to improve the environment and culture from "knowledge is power" to "knowledge-sharing is power."

3. Continued Reflection and Development of Existing Initiatives
Continuously reflect on the progress each Community of Practice is making and seek to understand the enablers and barriers to progress. *Establishing community success criteria is another important component* of continued reflection and development. After the initial start-up efforts, CoP activity becomes more spontaneous and less coordinated. The notable feature, however, is that CoPs are in action continuously, with the level of activity and number of people involved varying over time as issues to address come and go. Being an effective CoP member involves advancing one's capabilities and collective knowledge through various actions.

10.6.3. OpsCenter CHARLIE: Mobilize Communities of Practice

Objectives: The *outcome*, on completion of OpsCenter CHARLIE, will be increased awareness, interest and participation in Communities of Practice within the Enterprise through the exercising of specific techniques.

Key Topics

1. Sparking Interest in CoPs
Communities of Practice are beneficial to the organization as a whole because *individuals* directly benefit from the knowledge they gain through participation. One way to spark interest in a Community of Practice is through event planning. A "brown bag luncheon" titled "Accounting Best Practices" may spark the interest of individuals who use accounting principles to complete tasks. Individuals will not participate in Communities of Practice unless the benefits of participation are evidenced (benefits for the organization, and, just as importantly, the individual), participation is rewarded (directly or indirectly), or participation stems from a desire to learn about a particular area of interest.

2. Understanding What is Involved

One way to ensure that individuals understand what is involved in participating in a CoP is to review the learning styles of certain groups and from this design the appropriate messages to convey when encouraging participation and management support. This research and exercise will also give facilitators more insight into the group with whom they will be working.

3. Creating an Environment That Supports Creation and Sharing of Knowledge
Communities of Practice often already exist in an Enterprise. If this is the case, the Enterprise can concentrate on the best ways to mobilize communities so as to increase interaction and circulation of knowledge. As noted in OpsCenter BRAVO, effective management of a community's knowledge assets involves: identifying knowledge relevant to the community purpose, collecting and creating, classifying, filtering and synthesizing, publishing, disseminating, applying, revising, and archiving. Creating the environment to encourage and sustain these actions is the overarching goal of this OpsCenter.

4. Encouraging Participation and Provide Support
The initial process of recruitment into the CoP focuses on identifying a core team to participate in a given CoP and gaining the support of functional managers. The manner in which the development of the CoP is approached can greatly influence participation levels and 'stickiness.' Use a range of media to reach potential participants and in all cases check that the message has been received and understood. Explore the use of animated technologies to launch the CoP via e-mail. Speaking to potential participants in person or by telephone is also effective. This method of communication allows the knowledge manager the opportunity to explain what is involved and what the individual can expect to receive as a result of participating.

5. Facilitating Community of Practice Culture
Thinking about how Communities of Practice will impact organizations requires the use of one's imagination. Participating in a CoP can often seem like a risk because one must devote less time to one's specific work schedule and more time to a larger entity's agenda. An individual may or may not immediately realize the benefits of participation. By imagining an ideal Enterprise culture in which everyone works together to accomplish a community goal, one can begin to move towards making this image into a reality.

10.6.4. OpsCenter DELTA: Connect Communities of Practice to the Enterprise

Objectives: In this final OpsCenter, the focus is on connecting Communities of Practice to the Enterprise. The previous OpsCenters have concentrated on linking the individuals, organizations and content centers to Communities of Practice. The sometimes complex intermingling of personnel, commands, content centers, and CoPs forms the inner network of the Enterprise.

Key Topics

1. Revisiting Critical Factors

Review the following Community of Practice Attributes:

- Shared domain of practice
- Alignment with strategic direction
- Crosses operational, functional and organizational boundaries
- Defined by knowledge, not tasks
- Managed by making connections
- Focused on value added, mutual exchange and continuous learning
- Evolving agenda

To foster these CoP attributes within the Enterprise, keep the following critical factors in mind:

- Sense of urgency
- Trust
- Respect
- Key thought leaders
- Personal passion
- Open communications

2. Progress in Developing CoPs

Once CoPs are established, what indicates success or progress? What indicates that the CoP is connected to the Enterprise? CoP progress is often difficult to measure. A refocused strategic plan for developing a CoP may be necessary if: (1) no one knows who is responsible for creating CoPs, (2) no one understands what CoPs are, (3) no one seems to care even after extensive and concentrated efforts to encourage development, and (4) mental modes exist that this is "soft stuff" and therefore less urgent than other projects.

3. Develop CoP Specific Knowledge Blueprints

Refer back to the Knowledge Blueprint, revisited in OpsCenter BRAVO. The Knowledge Blueprint can assist in assessing the connection between the CoP and the Enterprise. The purpose of doing this is to identify the major gaps between the future knowledge requirements and the current initiatives. Members of a particular CoP can determine key leveraging points within CoP and use this information to advance the community within the Enterprise. At this stage, participants should articulate and agree to a current and future knowledge infrastructure that meets community and Enterprise needs. Complete a gap analysis between current reality and Enterprise vision. The ways in which an Enterprise accomplishes the mission and propagates the vision will probably differ from the ways in which organizations decide to accomplish the same mission and vision. This allows the Enterprise to maintain a conservative approach while developing inventive methodologies, creative strategies, and out-of-the box thinking through Communities of Practice.

10.7. OPAREA VII- Knowledge-Centric Homeport: Tying it all together

Congratulations on your successful journey. Before you sail into homeport and tie up to the pier, let's take a look at our progress.

10.7.1. OpsCenter ALPHA: Review the Journey

The Knowledge-Centric Organization journey began by looking at the new global world and building an understanding of the impact of knowledge on the economy. While still in Homeport, we then moved our focus from the world-view to the Department of Navy view (OPAREA I), and had the opportunity to explore the top-level framework and distributed implementation approach DoN is taking in knowledge management.

In OPAREA II we sailed toward Atlantis to prepare the organization, delving into issues of culture, leadership, relationships and communications. Key words in this area were: knowledge-sharing, dynamic tension, innovation and open space, social networks, knowledge flows and context.

Cave Island was our destination in OPAREA III, where we began building the knowledge-centric system, beginning with envisioning and strategizing and then developing performance measures and incentives before moving into the design and deploy phase. Key words in this area were: knowledge skills, knowledge audit, clumping and clustering , stickiness, tacit and explicit knowledge, knowledge creation and transfer, and knowledge taxonomy.

OPAREA IV took us to Sea Base, where we talked about how to operate and sustain the Knowledge Centric Organization before focusing on measuring performance, and assessing, validating and re-strategizing. Key words in this area were: management of expertise, mentoring and coaching, visualization, push-pull, learning histories, storytelling, after action reviews, action learning, and dialogue.

Our journey into the outer atmosphere brought us in OPAREA V to Space Station, where we focused on creating and brokering knowledge. Key words in this area were: learning styles, knowledge facilitator, knowledge harvester, knowledge expeditor,and knowledge instructor.

Entering the Fifth Dimension in OPAREA VI, we learned about building communities, moving through design, mobilizing and connecting. Key words were: sharing, barriers and culture. OpsCenters BRAVO and CHARLIE in this OPAREA address the relevance of Knowledge-Centric Organizations to Warfare and DoN Critical Issues.

The final leg of the journey, into the Knowledge-Centric Homeport uses stories and scenarios to Vision the Future.

10.7.2. OpsCenter BRAVO: Focus on Warfare

Whether conventional, urban or infrastructure-based in nature, 21st century warfare characteristics are fraught with ambiguity, rapidity and asymmetry. How then can we create a 21st century fighting force that is responsive to these unknown challenges? Certainly, as Albert Einstein states, we cannot create the 21st century Naval Service based on Industrial Age thinking. OpsCenter BRAVO offers a new thinking view of the Naval Service; a view that leverages the creative power of knowledge workers set in the Knowledge-Centric Organization context.

Adaptability needs to be an inherent feature of our Naval Service ... in today's world we must learn how to deal with the evolving warfare characteristics of ambiguity, rapidity and asymmetry. Let's briefly focus on each of these characteristics.

In an attempt to overcome our military advantage, adversaries will utilize ambiguity to stay below the threshold of clear aggression. This incremental approach avoids high visibility by remaining below the threshold of a direct confrontation to our national security. Rapidity, on the other hand, is fueled by global interconnectedness and results in event time compression. Quite literally, adversaries are able to operate inside our decision cycle time to achieve a strategic advantage. Finally, asymmetry takes many forms as opponents seek to out-maneuver U.S forces through time, space, technological, psychological, ethical, political or even strategic dimensions. Success in this environment, therefore, must derive from an inherent Naval force characteristic: adaptability. Adaptability is used widely, not just in military circles, but in business as well.

10.7.3. OpsCenter CHARLIE: Focus on Critical Issues

Knowledge-sharing is the fundamental key to addressing many of the critical issues faced by the Department of the Navy. Here are a few examples of how KCOs can leverage knowledge-sharing to help us achieve success.

- Reduced budgets and personnel reductions
- Functional organizational stovepipes
- Personnel turnover and aging workforce
- Knowing what we know
- Evolving rules and regulations

10.7.4. OpsCenter DELTA: Vision the Future

Topics

1. Continuous Learning

"This knowledge asset that exists within the heads of our associates will depreciate just like our plant and equipment depreciates unless it is continually replenished." -Bob Buckman, Chairman Buckman Laboratories

The Department of the Navy is often viewed as being world-class in providing educational opportunities for their Sailors, Marines and Civil Servants. So why the emphasis on learning? True to Bob Buckman's words, knowledge workers must be constantly replenished with new information and be given the opportunity to create new personal knowledge. The emphasis, therefore, is on continuous learning to create new knowledge. For a variety of reasons, most Department training remains centrally controlled and operated. Advantages of this approach include oversight and management as well as curriculum development for specialized equipment maintenance and operation.

2. Increased speed of innovation

Innovation starts with small ideas and then builds through constant interaction with other thought leaders and stakeholders throughout the enterprise. Through a combination of knowledge brokering and individual learning, the new idea evolves into an optimum solution for a particular problem. Innovation can take time, as communications between individuals can be long and involved. Accelerating the innovation processes from incipient idea to reality can be achieved through coupling distributed Knowledge-Centric Organizations.

3. Reduced cycle time reduction

Cycle time, the amount of time between the beginning and the end of a complete event, is probably one of the most frequently used measures in the world.

4. Leveraged expertise

While connectivity alone is insufficient, connectivity is essential to begin the worldwide exchange necessary to support our forward-deployed forces. Once that connectivity is in place, with enough bandwidth to carry the plethora of voice, video and data necessary for mission success, knowledge management systems will enable the right information to get to the right place where immediate decisions need to be made.

5. Cost savings from knowledge reuse

One of the greatest benefits KCOs offer to any Enterprise is in capturing the tacit knowledge of rotating and retiring personnel or reaching out to learn from other individuals who are performing similar work. Under the broad category of knowledge reuse, KCOs can save considerable resources - time and money - by taking advantage of this powerful feature.

6. Decision-making complexity

At the highest levels of the Department, decision-makers constantly strive to determine the proper mix between Operational Planning and Force Planning. Operational Planning deals broadly with deployments, readiness and sustainment while Force Planning focuses on force structure, capability, and development. The challenges are more than budgetary in nature, but rather a complex mix of resource allocation, weapon systems capability, logistical and personnel issues. The Planning, Programming and Budgeting System (PPBS) is the Department of Defense process that helps manage the complexity of this decision-making endeavor. PPBS runs over a two-year cycle, so the planning for a budget submission two years hence is actually starting now.

7. Improved Quality of Life

A proper work - personal life balance is becoming more difficult to achieve given the increased OPTEMPO but remains a vital Quality of Life issue in manpower retention.

8. Imagine your future

This story is your story. This future is your future. As you tie up to the pier and walk across the brow towards shore, you are fully qualified to imagine what your Knowledge-Centric Organization will look like, and work towards that future.